



1. Application details

1.1. Permit application details

Permit application No.: 2269/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Fox Resources Limited

1.3. Property details

Property: Mining Lease 47/344
Mining Lease 47/345
Local Government Area: Shire Of Roebourne
Colloquial name: Sholl B2 Nickel Project

1.4. Application

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

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 and are useful to look at vegetation extent in a regional context. Two Beard vegetation associations are located within the application area (GIS Database):

162 - Shrublands; snakewood scrub. According to the Shared Land Information Platform (SLIP, 2007), Beard vegetation association 162 is a shrubland dominated by *Acacia xiphophylla*, with sub-dominants of *A. aneura*, *A. victoriae*, *Senna glutinosa ssp. charlesiana* over *Triodia longiceps* and *Maireana melanocoma*.

589 - Mosaic: Short bunch grassland - savanna/grass plain (Pilbara)/Hummock Grasslands, shrub-steppe; kanji over soft spinifex. According to the Shared Land Information Platform (SLIP, 2007), Beard vegetation association 589 is grasslands of *Triodia sp.* (hummock) or *Eragrostis sp.* (tussock).

A vegetation survey was conducted over the application area in April 2007. As a result 13 vegetation communities were identified within the application area (Mattiske, 2007). These are:

T1: Hummock grassland of *Triodia wiseana* with scattered *Acacia pyrifolia* on lower slopes and hills.

T2: Hummock grassland of *Triodia wiseana* with scattered *Acacia inaequilatera* on lower slopes.

T3: Hummock grassland of *Triodia wiseana* with patches of *Acacia ancistrocarpa* and *Acacia pyrifolia* on lower slopes.

A1: Scrub of *Acacia xiphophylla* over *Triodia epactia* and *Cenchrus ciliaris* (buffel) on stoney plains.

A2: Hummock grassland of *Triodia epactia* and *Triodia wiseana* with scattered *Acacia pyrifolia*, *A. bivenosa* and *A. synchronica* on stoney plains.

A3: Scrub of *Acacia xiphophylla* over *Eragrostis xerophila* and *Cenchrus ciliaris* (buffel) on stoney plains.

MC1: Scrub of *Acacia pyrifolia*, *A. bivenosa* and *A. acradenia* over *Cenchrus ciliaris* (buffel) with emergent *Corymbia hamersleyana* in minor drainage channels.

MC2: Scrub of *Acacia acradenia*, *A. bivenosa* and *A. pyrifolia* over *Triodia epactia* and/or *T. wiseana* in minor drainage channels.

MC3: Scrub of *Acacia bivenosa*, *A. pyrifolia* and *A. inaequilatera* over *Cenchrus ciliaris* (buffel) in minor drainage channels.

G1: Closed bunch grassland of *Eriachne flaccida*, *Cenchrus ciliaris* (buffel), *Eragrostis xerophila* and *Chrysopogon fallax* with emergent *Acacia pyrifolia* and *Hakea lorea*.

R1: Scrub of *Clerodendrum floribundum* var. *angustifolium* over *Jasminum didymum* ssp. *lineae*, *Cucumis melo* ssp. *agrestis* (Ulcardo melon) and *Cenchrus ciliaris* (buffel) on rockpiles.

R2: Low open woodland of *Brachychiton gregorii* and *Ficus opposita* var. *indecora* over *Jasminum didymum* ssp. *lineare*, *Cucumis melo* ssp. *agrestis* (Ulcardo melon) and *Cenchrus ciliaris* (buffel) on rockpiles.

R3: Open bunch grassland with *Jasminum didymum* ssp. *lineare*, *Cucumis melo* ssp. *agrestis* (Ulcardo melon) and *Cenchrus ciliaris* (buffel) on rockpiles.

Clearing Description	Fox Resources Ltd have applied to clear up to 225 hectares of native vegetation for the purpose of constructing a new nickel mine. Fox have advised that the initial mine area will be approximately 30 hectares but have requested approval for up to 225 hectares to allow for future expansion. The assessing officer does not expect that the full 225 hectares will be cleared.
Vegetation Condition	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)
Comment	The vegetation within the application area was described by Mattiske (2007) as 'good' where current infrastructure such as tracks and drill pads are in place, to 'excellent' in less disturbed areas of native vegetation.

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 may be at variance to this Principle</p> <p>The application areas occur within the Hamersley (PIL3) IBRA Sub-Bioregion (GIS Database). This sub-bioregion is characterised by Mulga low woodland over bunch grasses on fine textured soils in valley floors, and <i>Eucalyptus leucophloia</i> over <i>Triodia brizoides</i> on skeletal soils of the ranges (CALM, 2002). The vegetation described within the application areas (Mattiske, 2007) is typical of the bioregion.</p> <p>Vegetation surveys of the application areas identified 92 flora species from 33 Families (Mattiske, 2007). This is considered to represent moderate biological diversity. Poaceae, Mimosaceae, Papilionaceae, are particularly diverse within the application area. This is typical of the floristics of the Pilbara IBRA Region.</p> <p>A desktop fauna survey conducted by Ninox (2007) suggests that the application areas may be diverse in reptile species with 85 species from 8 Families potentially occurring within the application area. There is potentially the greatest species diversity in skinks (29) and geckos (15) (Ninox, 2007). Many reptiles species listed within the survey report are endemic to the Pilbara Region. The area may also be diverse in bird species with 82 species from 36 Families, reflecting the diverse range of habitat types found within the greater Pilbara IBRA Bioregion.</p> <p>Five alien weed species were recorded within the application areas during recent vegetation surveys (Mattiske, 2007). Weeds have the potential to impact negatively on biodiversity by competing with native species for available resources and causing the vegetation to become more fire-prone. Frequent burning can result in loss of biodiversity, and promote further weed infestation. None of the weed species recorded are declared weeds pursuant to the Agriculture and Related Resources Protection Act, 1976.</p> <p>Therefore, although the application areas are high in biodiversity they are not likely to have greater diversity than similar areas within the region. It is noted that the area has been previously disturbed by exploration activities.</p> <p>Based on the above, the proposed clearing may be at variance to this Principle. It is recommended that conditions be placed on any permit granted to require the permit holder to control weed species within the application area and to retain all topsoil and vegetative material removed during clearing to be used in rehabilitation.</p>
Methodology	CALM (2002) Mattiske (2007) Ninox (2007)

(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	<p>Proposal is not likely to be at variance to this Principle</p> <p>A Level 1 fauna assessment for the application area was conducted by Ninox Wildlife Consulting (hereafter referred to as Ninox). This involved a review of available databases to determine which fauna species of</p>
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conservation significance may occur within the application area (Ninox, 2007). Ninox also reviewed a flora survey over the application area conducted by Mattiske in April 2007 to identify potential habitat types.

As a result, six fauna habitats were identified (Ninox, 2007) ?

- Hummock Grasslands;
- Acacia scrublands;
- Acacia scrublands with Eucalypts;
- Grassland;
- Minor Drainage Channels; and
- Rockpiles.

These habitat types are common in the Pilbara region and are not considered significant.

Ninox (2007) identified 33 mammal, 85 reptile, 4 amphibian and 82 bird species that may occur within the application area. Of these, the following are of conservation significance: Mulgara (*Dasyercus cristicauda*), Northern Quoll (*Dasyurus hallucatus*), Bilby (*Macrotis lagotis*), Pilbara Leaf-nosed Bat (*Rhinonictis aurantius*), Spectacled Hare-wallaby (*Lagorchestes conspicillatus leichardti*), Ghost Bat (*Macroderma gigas*), Lakeland Downs Mouse (*Leggadina lakedownensis*), Western Pebble-mound Mouse (*Psuedomys chapmani*), Pilbara Olive Python (*Liasis olivaceous barroni*), *Ctenotus nigrilineatus* (a skink), *Lerista quadrivincula* (a skink), *Notoscincus butleri* (a skink), *Ramphotyphlops ganeii* (a blind snake), Night Parrot (*Pezoporus occidentalis*), Peregrine Falcon (*Falco peregrinus*), Rainbow Bee-eater (*Merops ornatus*), Fork-tailed Swift (*Apus pacificus*), Australian Bustard (*Ardeotis australis*), Bush Stone-curlew (*Burhinus grallarius*) and Flock Pigeon (*Phaps histrionica*).

Based on soil and habitat type found within the application area, only the Western Pebble-mound Mouse, *Notoscincus butleri*, Peregrine Falcon, Rainbow Bee-eater, Australian Bustard and Bush Stone-curlew are likely to occur within the application area.

The Western Pebble-mound Mouse (DEC Priority 4) is described as constructing pebble mounds on slopes composed of stony soils, near sharply incised drainage lines (Start et al, 2000). Mounds are built in vegetation dominated by hard spinifex (*Triodia basedowii* or *T. wiseana*) (Start et al, 2000). No mounds were observed by Mattiske during a flora survey in April 2007 (Ninox, 2007). The vegetation within the application area may be habitat for this species, but given its widespread distribution where suitable habitat is present and the lack of mounds in the application area, it is not likely that the vegetation within the application area is significant habitat for this species.

Notoscincus butleri (DEC Priority 4) is a small skink that is considered endemic to the Pilbara (Morton et al, 1995). It has a restricted range along the coastal area of the Pilbara, commonly occurring in spinifex dominated areas adjacent to riparian habitats. The vegetation within the application area may be suitable habitat for this species, however, given the large amounts of suitable habitat within the Pilbara region, the vegetation within the application area is not likely to be significant habitat for this species.

The Peregrine Falcon (Schedule 4 - Other specially protected fauna, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) is known to inhabit most areas in Australia and utilise cliffs, tall trees and granite outcrops for nesting (Australian Museum Online, 2007). The Peregrine Falcon is likely to occur sporadically within the application area, but is not likely to nest in the area due to an absence of tall trees or rocky outcrops.

The Rainbow Bee-eater (Migratory species under the *Environmental Protection and Biodiversity Conservation Act 1996*) is able to utilise a wide range of habitat types and nests in sandy soils. Given the lack of sandy soils within the application area, the species cosmopolitan distribution and the degraded nature of the vegetation to be cleared, the habitat within the application area is not significant habitat for this species.

The Australian Bustard (DEC Priority 4) prefers tussock grassland, *Triodia* hummock grassland, grassy woodland and low shrublands (Garnett et al, 2000). This species may occur within the application area, however, given the widespread distribution of this species and the degraded nature of the vegetation to be cleared, the habitat within the application area is not significant habitat for this species

The Bush Stone-curlew (DEC Priority 4) is known to frequent lightly timbered open woodlands. Whilst vegetation within the application area may support the species, it is not likely that the Bush Stone-curlew is dependant upon the vegetation within the application area for its continued existence in the local area. Therefore, the vegetation is not significant habitat for this species.

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

Methodology Australian Museum Online (2007)
Garnett et al (2000)
Morton et al (1995)
Ninox (2007)

(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 databases, no Declared Rare or Priority Flora species have been recorded within the application areas (GIS Database).

The application area was surveyed in April 2007 Mattiske (2007). As a result of this survey, 13 vegetation types were identified. Of these, two vegetation types (MC1 and MC2) were habitat for the priority flora species *Themeda sp.* Hamersley Station (P3).

T. sp. Hamersley Station was found in four locations within the habitats MC1 and MC2. Of these, one population is likely to be removed by the initial proposed clearing (29-30 hectares). However, it is noted that if further clearing is required, to the full extent applied for, all four populations will be removed.

T. sp. Hamersley Station has been recorded over a widespread distribution within the Pilbara. It has mostly been recorded in drainage lines and on self cracking clays (Western Australian Herbarium, 2008). The impact to *T. sp.* Hamersley Station has not been quantified by Mattiske in their survey report. However, given its widespread distribution, and the prevalence of drainage line habitat within the Pilbara region it is not likely that the vegetation within the application area is significant habitat for this priority species.

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

Methodology Western Australian Herbarium (2008)
Mattiske (2007)
GIS Database:
- Declared Rare and Priority Flora List- CALM 01/07/05

(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 within the application area (GIS Database).

None of the vegetation types identified by Mattiske (2007) are Threatened Ecological Communities or ecological communities at risk.

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

Methodology Mattiske (2007)
GIS Database:
- Threatened Ecological Communities - CALM

(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

According to available databases, the application areas fall within the Pilbara IBRA Bioregion (GIS Database). This bioregion's vegetation extent remains at approximately 100% of its Pre-European extent*. Beard Vegetation Association's 162 and 589 occur within the application areas (GIS Database). These vegetation associations remain at approximately 100% of their Pre-European extent respectively*.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~100	Least Concern	6.3
Beard veg assoc. – State					
162	547,268	547,268	~100	Least Concern	11.4
589	808944	808944	~100	Least Concern	1.6
Beard veg assoc. - bioregion					
162	20,007	20,007	~100	Least Concern	0
589	730,724	730,724	~100	Least Concern	1.8

* Shepherd et al. (2001) updated 2005

** Department of Natural Resources and Environment (2002)

Therefore, the application areas are not considered to be significant remnants of vegetation in an area that has been extensively cleared.

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd et al (2001)
GIS Database:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Pre-European Vegetation - DA 01/01

(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

Several minor, non-perennial drainage lines occur within the application area (GIS Database). These drainage lines are within the Nickol River Catchment Area. The vegetation identified by Mattiske (2007) within the drainage lines could not be considered riparian as water would only flow within these drainage lines during times of extreme rainfall, such as cyclonic events. There is likely to be some disturbance to some drainage lines as a result of clearing.

Given that the area is a *Rights in Water Irrigation Act, 1914* (RIWI) Act Surface Water Management Area (GIS Database), Fox Resources may require authority from the Department of Water (DoW) to disturb the bed and banks of these ephemeral drainage lines. It is Fox Resources responsibility to ensure that all necessary approvals have been obtained prior to the commencement of any clearing associated with this proposal.

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

Methodology Mattiske (2007)
GIS Database:
- Hydrography, Linear - DOE 1/2/04

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

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

The application area has been surveyed by the Department of Agriculture and Food (Van Vreeswyk et al 2004).

The application area is composed of the following land systems (GIS Database):

- Ruth
- Rocklea
- Paraburdoo
- Horseflat

The Ruth Land System is described as hills and ridges of volcanic and other rocks supporting hard spinifex

(occasionally soft spinifex) grasslands (Van Vreeswyk et al, 2004). The system is not prone to erosion (Van Vreeswyk et al, 2004). The Ruth Land System comprises approximately three quarters of the application area. An analysis of aerial photography for the area reveals the application area is most likely to consist of 'lower slope and stony plain' and 'narrow drainage floor, creekline and channel' land units. The soil types within these land units are not susceptible to erosion (Van Vreeswyk et al, 2004).

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). The system has a very low erosion hazard (Van Vreeswyk et al, 2004). A small area of the Rocklea Land System occurs in the south east corner of the application area. An analysis of aerial photography for the area reveals the application area is most likely to consist of 'hill, ridge, plateaux and upper slope' and 'lower slope' land units. The soil types within these land units are not susceptible to erosion (Van Vreeswyk et al, 2004).

The Paraburdoo Land System is described as basalt derived stony gilgai plains and stony plains supporting snakewood and mlga shrublands with spinifex and tussock grasses (Van Vreeswyk et al, 2004). A small area of Paraburdoo Land System occurs in the north east corner of the application area. The system is inherently resistant to erosion except for drainage zones (Van Vreeswyk et al, 2004). An analysis of aerial photography for the area reveals the application area is most likely to consist of 'upper interfluvium and slope', 'gilgai plain' and 'drainage zone' land units. The drainage zone land unit is moderately susceptible to erosion (Van Vreeswyk et al, 2004).

The Horseflat Land System is described as gilgaied clay pans supporting tussock grasslands and minor grassy snakewood shrublands (Van Vreeswyk et al, 2004). A small area of Horseflat Land System occurs in the western corner of the application area. An analysis of aerial photography for the area reveals the application area is most likely to consist of the 'gilgaied plain' land unit. This land unit is inherently resistant to erosion (Van Vreeswyk et al, 2004).

The application area experiences low rainfall (312 mm/year) (BOM, 2008), and very high pan evaporation rates (~3400 mm/year) (Luke et al, 1987). Most rainfall will be either utilised by vegetation or lost through evaporation. Subsequently, there is little recharge of groundwater as a result of rainfall. As a result, the removal of up to 225 hectares of vegetation is not likely to lead to a rise in the water table, which can lead to waterlogging or salinisation. The assessing officer notes that it is unlikely that the full 225 hectares will be cleared.

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

Methodology BOM (2008)
Luke et al (1987)
Van Vreeswyk et al (2004)
GIS Database:
- Rangeland Land System Mapping - DA

(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 located approximately 30 kilometres to the north west of Millstream-Chichester National Park (GIS Database). At this distance it is not likely that the vegetation within the application area provides a buffer to a conservation area, or is important as an ecological link to a conservation area. The vegetation types within the application areas are well replicated in other land systems within the Pilbara region. Subsequently, their conservation status is under no threat.

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

Methodology GIS Database:
- CALM Managed Lands and Waters - CALM 1/7/05

(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 Supply Area (PDWSA) (GIS Database).

There are no permanent waterbodies or watercourses within, or in association with the application area (GIS Database). Rainfall in this area is mainly restricted to a wet summer season, where precipitation can be variable. Rain can be either intense falls associated with cyclonic events, or scattered falls associated with local thunderstorms. The application area receives rainfall of approximately 312 mm/year (BOM, 2008), and experiences a pan evaporation rate of approximately 3400 mm/year (Luke et al, 1987). Therefore, during normal rainfall events, surface water within the application area is likely to evaporate or be utilised by vegetation quickly. However, substantial rainfall events create surface sheet flow which is likely to be high in sediments.

During normal rainfall events, the proposed clearing would not likely lead to an increase in sedimentation of waterbodies on or off-site.

The application area lies within a proclaimed area under the *Rights in Water Irrigation Act, 1914*. Any taking or diversion of surface water in the area is subject to a license issued by the DoW (DoW, 2008). Disturbance to the bed or bank of any watercourse within the area will require a permit from the DoW (DoW, 2008).

The application area is located within the Pilbara Groundwater Area, proclaimed under the *Rights in Water Irrigation Act, 1914* (DoW, 2008). Any groundwater abstraction in this area is subject to licensing by the DoW.

The DoW is satisfied that the proposed clearing of 225 hectares is unlikely to have a significant impact on the quality or quantity of groundwater (DoW, 2008).

There are no known Groundwater Dependant Ecosystems within the application area (GIS Database).

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

Methodology DoW (2008)
GIS Database:
- Groundwater, Statewide - DoW
- Public Drinking Water Source Areas (PDWSA's) - DoW
- Hydrography, Linear - DOE 1/2/04
- Potential Groundwater Dependent Ecosystems - DoE 2004

(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 an arid, tropical climate with a wet summer season and a dry winter season (BOM, 2008). Most rainfall is received during the wet season, although falls can be variable (BOM, 2008). Rainfall can either be sporadic (local thunderstorms), or heavy and intense (cyclonic events). It is likely that during times of intense rainfall there may be some localised flooding in adjacent areas.

The application area occurs within the Karratha Coast sub-catchment area, approximately 1269 km² in size. The clearing of 225 hectares within this sub-catchment is not likely to lead to an increase in flood height or duration. It is noted by the assessing officer that it is unlikely that the full 225 hectares will be cleared by the applicant.

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

Methodology BOM (2008)

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

Comments

There is a native title claim over the area under application (GIS Database). The claim has been registered with the National Native Title Tribunal. However, the mining tenement has been granted in accordance with the future act regime of the *Native Title Act, 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act, 1993*.

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

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 applicant has applied to clear up to 225 hectares of native vegetation. This is the entire extent of the application area. However, information supplied by the applicant suggests approximately 30 hectares will be necessary to create the mine and associated infrastructure. Fox Resources have advised that they wish to apply for the extra area in case of mine expansion in the future.

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

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Mineral Production	Mechanical Removal	225	<p>The proposal has been assessed against the Clearing Principles and has been found to be at variance to Principle (f), may be at variance to Principle (a), is not likely to be at variance to Principle (b), (c), (d), (g), (i) and (j) and is not at variance to Principle (e) and (h).</p> <p>It is recommended that should a permit be granted, conditions be endorsed on the permit with regards to weed management, retention of topsoil and vegetative material cleared to be used in rehabilitation, limiting the amount of area that can be cleared per year, recording the areas cleared and reporting the areas so cleared.</p>

5. References

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6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
DoW	Department of Water
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)

GIS	Geographical Information System.
IBRA	Interim Biogeographic Regionalisation for Australia.
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

Definitions:

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

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

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

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

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

five years.

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

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