



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1869/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Dampier Salt Ltd

1.3. Property details

Property: Leslie Solar Salt Industry Agreement Act 1966
Mineral Lease 250SA (AML 70/250)
Local Government Area: Town Of Port Hedland
Colloquial name: Port Hedland Salt Operation

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
20		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	Clearing Description	Vegetation Condition	Comment
<p>Bead vegetation associations have been mapped at a 1:250,000 scale for the whole of Western Australia, and are a useful tool to examine the vegetation extent in a regional context. Three Beard vegetation associations are located within the area proposed to be cleared (GIS Database, Shepherd <i>et al.</i>, 2001), and include:</p> <p>127: Bare areas - mudflats;</p> <p>589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex;</p> <p>647: Hummock grasslands, dwarf-shrub steppe; <i>Acacia translucens</i> over soft spinifex.</p> <p>The vegetation located within the areas proposed to be cleared was surveyed by Biota (2006a). The survey was conducted as a part of the expansion project of the existing crystalliser ponds. No Declared Rare Flora (DRF) were located, and only one priority flora species (<i>Abutilon trudgenii</i> ms) was recorded outside the proposed clearing areas during the survey (Biota, 2006a).</p> <p>Biota (2006a) also identified the following vegetation association within the proposed areas to be cleared, at a 1:22,500 scale:</p> <p>LP:As - Plains area with <i>Acacia stellaticeps</i> low to low open shrubland over <i>Triodia epactia</i> mid-dense hummock grassland and <i>Eriachne obtusa</i> open tussock grassland;</p> <p>The survey identified the widespread occurrence of introduced species, including <i>Aerva javanica</i> (Kapok Bush), <i>Cenchrus ciliaris</i> (Buffel Grass),</p>	<p>Dampier Salt Ltd have applied to clear up to 20 hectares of native vegetation within a total application area of approximately 74.8 hectares. The proposed clearing is for the purpose of borrow pits and location of a temporary camp, in order to undertake urgent repairs to levees and roads damaged as a result of tropical cyclone George.</p> <p>Some of the area proposed to be cleared has previously been disturbed by various activities, including the construction of crystalliser ponds.</p> <p>The initial application was for clearing of up to 20 hectares of native vegetation within the state agreement lease area Mining Lease 250SA (approximately 762 hectares). However, the assessing officer and Dampier Salt Limited have negotiated to limit the proposed clearing envelope. The application area has been reduced from approximately 762 hectares to two defined areas, totalling approximately 74.8 hectares.</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).</p> <p>To</p> <p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).</p>	<p>The vegetation condition is derived from the vegetation description provided by Biota (2006a) and aerial photography.</p> <p>Dampier Salt Limited (from here on referred to as Dampier Salt) has an Environmental Management System (Rio Tinto Minerals - Asia Pacific Environmental Management System (Certified ISO14001:2004) in place, which includes a number of management measures to prevent environmental degradation.</p> <p>Clearing Permit 1869/1 was originally granted on 5 July 2007, with the Permit becoming live on 4 August 2007 and expiring on 4 August 2009.</p> <p>The Permit has been amended to extend the duration of the Permit from 4 August 2007 to 31 July 2012. Additionally the Permits reporting and record keeping conditions have been modified to reflect standard wording and to align the permit reporting date with the permit expiration date.</p>

Cenchrus setiger (Birdwood Grass), *Chloris barbata* (Purpletop Chloris), *Clitoria ternatea* (Butterfly Pea), *Indigofera oblongifolia*, *Indigofera sessiliflora*, and *Malvastrum americanum* (Spiked Malvastrum) (Biota, 2006a).

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 within the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion, and the Roebourne IBRA subregion (GIS Database).

Kendrick and Stanley (2001) assessed the biodiversity of the Roebourne IBRA subregion in relation to landscape, ecosystem, species and genetic values. High species and ecosystem diversity as well as a centre of endemism are cited for the Burrup Peninsula (Kendrick and Stanley, 2001), which is located approximately 200 kilometres west of the clearing permit application area. The basalt rock piles in the region are listed as fire refuges in Kendrick and Stanley (2001), however, no such habitats were found within the application area during the Biota (2006a; 2006b) surveys.

The application areas are located immediately adjacent to roads and some sections of the application area have been previously disturbed by construction of crystalliser ponds (GIS Database, Biota, 2006a).

Only one species of flora of conservation significance (*Abutilon trudgenii* ms (P3)) was recorded during the Biota (2006a) survey. However, this species was not recorded within the areas proposed to be cleared. A number of species of fauna of conservation significance were recorded during the Biota (2006b) survey. However, the vegetation and habitat types occurring within the application area are well represented in the region (GIS Database; Biota, 2006a; 2006b), and impacts on the conservation status of these species are unlikely.

The application area is unlikely to represent an area of higher biodiversity value when compared to representative vegetation in a local and regional context.

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

Methodology Biota (2006a).
Biota (2006b).
Kendrick and Stanley (2001).
GIS Database:
Interim Biogeographic Regionalisation of Australia (subregions).
- Interim Biogeographic Regionalisation of Australia.
- Pre-European Vegetation.
- Port Hedland Townsite 20cm Orthomosaic.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

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

Biota (2006b) conducted a field fauna survey over a ten day period between 17 and 26 September 2005. The survey was conducted over the whole Mining Lease 250SA tenement area, including the proposed clearing areas. The findings of the survey were a total of 83 vertebrate species, including 31 birds, eight native mammals, three introduced mammals, 38 reptiles and three frogs.

No fauna species listed on the Western Australian's threatened species list were recorded during the survey (Biota, 2006b). Two species of fauna listed on the DEC's Priority Fauna list (*Mormopterus loriae cobourgiana* (P1) *Ardeotis australis* (P4)) were confirmed as occurring in the area (Biota, 2006b).

The Biota (2006b) survey identified two main habitats within the areas proposed to be cleared:

- undulating sandy plain consisting of Acacia low shrubland over Triodia hummock grassland; and
- floodplain consisting of Acacia open shrubland over buffel grass.

None of the habitats surveyed over the proposed clearing areas are considered to be unique or restricted in their distribution (Biota, 2006b).

A search of the DEC Priority fauna Databases was conducted by DEC on behalf of the proponent. The search revealed seven species of conservation significance previously recorded within a 50 kilometre buffer area surrounding the application area (Biota, 2006b). The results of that search were:

- *Lagostrophus fasciatus fasciatus* (Banded Hare-wallaby) - 'Schedule 1 - Fauna that is rare or likely to become extinct' in the *Wildlife Conservation (Specially Protected Fauna) Notice, 2007*;
- *Aspidites ramsayi* (Woma - southwest population) - 'Schedule 4 – Other specially protected fauna' in the *Wildlife Conservation (Specially Protected Fauna) Notice, 2007* and Priority 1;
- *Mormopterus loriae cobourgiana* (Little North-western Mastiff Bat or Mangrove Freetail Bat) - Priority 1;
- *Macroderma gigas* (Ghost Bat) - Priority 4;
- *Pseudomys chapmani* (Western Pebble-mound Mouse (Ngadji)) - Priority 4;
- *Ardeotis australis* (Australian Bustard) - Priority 4; and
- *Numenius madagascariensis* (Eastern Curlew) - Priority 4 (Biota, 2006b).

The Mangrove Freetail Bat was recorded within the survey area (Biota, 2006b). The species partially relies on the habitat within the proposed area to be cleared for prey foraging. However, impacts through habitat loss are considered low due to the proposed size of the clearing, and as roosting occurs within the mangrove habitat outside the proposal areas.

The Australian Bustard occurs within the survey area (Biota, 2006b). Potential impacts upon the species includes habitat loss, however, the species is relatively widespread, and the relatively small area of the proposed clearing is unlikely to have any significant impacts on the habitat for this species.

The Eastern Curlew is likely to occur in mangrove habitat adjacent to the proposed clearing areas (Biota, 2006b). Impacts through habitat loss are considered low, as its preferred habitat occurs outside the clearing envelope (Biota, 2006b).

The Ghost bat is likely to occur in the region, but as there are no known caves or abandoned mines within the application areas, the likelihood of them roosting within the proposed clearing area is very low (Biota, 2006b).

The Banded Hare-wallaby is unlikely to occur within the areas proposed to be cleared, as the records in the Port Hedland area are historical, and extant animals are known only to exist on Bernier and Dorre Islands and at Shark Bay (Biota, 2006b).

Records of Woma are also present in the Priority fauna DEC database, however, only the southwest population of this species is listed as specially protected (Biota, 2006b). The northern form that could potentially occur within the proposed areas to be cleared is not currently listed as a threatened or priority species (Biota, 2006b).

The Western Pebble-mound mouse is unlikely to occur within the area, due to the absence of preferred habitat (the species requires pebbles to build complex burrow systems) (Biota, 2006b).

The fauna habitats within the proposed areas to be cleared are closely linked to the vegetation associations and landforms. Since the clearing envelope has been reduced to 74.8 hectares, the habitats are well represented elsewhere within the tenement boundaries and its surrounds, and no significant loss of habitat for fauna indigenous to WA is expected.

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

Methodology Biota (2006b).

(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

GIS Databases have no records of threatened flora species within a 50 kilometre radius of the application area (GIS Database). The nearest recorded threatened flora is *Terminalia supranitifolia* (P3), located approximately 200 kilometres west of the proposed clearing area (GIS Database).

A survey of DEC and Western Australian Herbarium rare flora databases conducted on behalf of the proponent yielded 18 records of seven flora species occurring within 50 kilometres. These species are:

- *Ptilotus appendiculatus* var. *minor* (Priority 1);
- *Tephrosia andrewii* (Priority 1);
- *Euphorbia clementii* (Priority 2);
- *Gomphrena pusilla* (Priority 2);
- *Acacia glaucocaesia* (Priority 3);
- *Goodenia pasqua* (Priority 3); and
- *Gymnanthera cunninghamii* (Priority 3) (Biota, 2006a).

Biota (2006a) conducted an eight day survey (17 to 24 September 2005) of the Mining Lease 250SA area, which includes the application area, as well as areas north of the application area. No Declared Rare Flora (DRF) were recorded during the survey (Biota, 2006a). A single Priority flora species, *Abutilon trudgenii* ms

(Priority 3) was recorded during the Biota (2006a) survey. This species occurs outside the areas proposed to be cleared.

Abutilon trudgenii ms has been recorded from various locations, including Warralong, Woodstock, Point Sampson, Karratha and Pannawonica. It is unlikely that the proposed clearing will impact significantly on the conservation status of this species.

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

Methodology Biota (2006a).
GIS Database:
- Declared Rare and Priority Flora List.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

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

There are no known Threatened Ecological Communities (TECs) within the proposed clearing area (GIS Database). The nearest Ministerially endorsed TECs are the Themeda Grassland Communities, located approximately 230 kilometres south from the clearing permit application area (GIS Database).

During the Biota (2006a) survey, an area of limestone ridge, approximately 4 kilometres north-east of the proposed clearing area was considered to have high conservation value, given that the substrate is unlikely to be well represented in the region, and is likely to be restricted to similar coastal limestone substrata in the Pilbara region. The vegetation type, however, is not listed as a TEC, and does not contain any Rare or Priority flora species (Biota, 2006a).

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

Methodology Biota (2006a).
GIS Database:
- Threatened Ecological Communities.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is not at variance to this Principle

Approximately 99.9% and 99.5% of the Pre-European vegetation remains in the IBRA Pilbara bioregion and Roebourne IBRA sub-region respectively, within which this proposal is located (GIS Database, Shepherd *et al.*, 2001). Available aerial photography (GIS Database) and information from the Biota (2006a) survey indicate that the areas surrounding this clearing permit application have not been cleared extensively, as can be seen from the table below.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,163	17,794,650	~99.9	Least concern	6.3
IBRA subregion – Roebourne	1,844,132	1,834,871	~99.5	Least concern	6.3
Beard veg assoc. – Bioregion					
127	180369	177,714	~98.5	Least concern	0.0
589	680,454	680,419	~100	Least concern	1.8
647	196,372	196,372	~100	Least concern	0.0

* Shepherd *et al.* (2001) updated 2006

** Department of Natural Resources and Environment (2002)

The proposed clearing area is not considered to be a significant remnant of native vegetation within an extensively cleared area.

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

Methodology Biota (2006a).
Shepherd *et al.* (2001).
GIS Database:

- Interim Biogeographic Regionalisation of Australia (subregions).
- Interim Biogeographic Regionalisation of Australia.
- Port Hedland Townsite 20cm Orthomosaic.

(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 not likely to be at variance to this Principle

There are no watercourses or waterbodies within the proposed clearing application area (GIS Database).

The closest non-perennial watercourse is the Beebingarra Creek, located approximately 130 metres east of the proposed temporary camp site. As this watercourse is outside the area proposed to be cleared, it is unlikely that native vegetation associated with the watercourse will be impacted.

It is not anticipated that clearing within the permit application areas will have a significant impact on the regional hydrology of the area, as most of the flows are dependant on high intensity rainfall events.

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

Methodology GIS Database:

- Hydrography, linear.
- Hydrography, linear.
- 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 clearing application area lies within the Uaroo land system (sandy surfaced plains: not degraded or eroded) (GIS Database, Van Vreeswyk *et al.*, 2004). The Uaroo land system is generally not susceptible to erosion or significant degradation (Van Vreeswyk *et al.*, 2004).

Eight introduced species (weeds) were recorded within and surrounding the proposed clearing areas during the Biota (2006a) survey. They were:

- *Aerva javanica* (Kapok Bush);
- *Cenchrus ciliaris* (Buffel Grass);
- *Cenchrus setiger* (Birdwood Grass);
- *Chloris barbata* (Purpletop Chloris);
- *Clitoria ternatea* (Butterfly Pea);
- *Indigofera oblongifolia*;
- *Indigofera sessiliflora*; and
- *Malvastrum americanum* (Spiked Malvastrum) (Biota, 2006a).

Of the introduced species recorded during the Biota (2006a) survey, *Aerva javanica*, *Cenchrus ciliaris*, *C. setiger* and *Malvastrum americanum* are common and widespread weeds in the Pilbara region.

Based on the above, the proposal may be at variance to this Principle. However, provided appropriate weed and erosion control measures are implemented, it is unlikely that the proposed clearing will result in significant land degradation.

Methodology Biota (2006a).

Van Vreeswyk *et al.* (2001).

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 likely to be at variance to this Principle

The nearest Directory of Important Wetlands (formerly Australian Nature Conservation Agency (ANCA)) wetland area is the Leslie (Port Hedland) Saltfields System, located approximately seven kilometres north-east of the proposed clearing areas (GIS Database). The Saltfields System plays an important ecological role, as a major migration stop-over area for shorebirds in the East-Asia-Australasia Flyway (Department of the Environment and Water Resources, 2007). However, based on the distance between the proposed clearing and the wetlands, adverse impacts on the environmental values of the wetlands are unlikely.

The nearest Department of Environment and Conservation (DEC) managed area is the Class "A" North Turtle Island Nature Reserve, located off-shore, approximately 56 kilometres north-east of the proposed clearing areas (GIS Database). The nearest on-shore DEC managed area is the Class "A" Mungaroo Range Nature Reserve, located approximately 115 kilometres south-west of the proposed clearing areas (GIS Database). Based on the distance between the proposed clearing and the nature reserves, adverse impacts on the environmental values of those reserves are unlikely.

The Coastal Region - Mary Anne Islands to Cape Keraudren Red Book Area (System 8.7) is located approximately 71 kilometres east from the proposed clearing (GIS Database). The closest on-shore Red Book area is the Marble Bar Red Book Area (System 8.9), located approximately 73 kilometres south of the proposed clearing areas. The recommendation from the Environmental Protection Authority (EPA) (1993) was that no action be taken with regards to the Marble Bar Red Book area. Also, based on the distance between the proposed clearing permit area and the Marble Bar Red Book area, any adverse impacts on the environmental values of that area are unlikely.

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

Methodology Department of the Environment and Water Resources (2007).
EPA (1993).
GIS Database:
- ANCA, Wetlands.
- CALM Managed Lands and Waters.
- CALM proposed 2015 pastoral lease exclusions.
- CALM Regional Parks.
- Proposed National Parks.
- Register of National Estate.
- System 1 to 5 and 7 to 12 Areas.

(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 proposed clearing is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

Groundwater within the area under application is fresh to brackish, at between 1,000 - 3,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). Given the small size of the proposed clearing, the quality of the groundwater is unlikely to be impacted by the proposed clearing activity.

The proposed clearing area is relatively flat, and is not associated with any permanent watercourse or waterbody (GIS Database).

The limited amount of clearing proposed (20 hectares), in comparison with the extent of the Port Hedland Coastal catchment area (which is approximately 744,301 hectares) is unlikely to result in deterioration in the quality of groundwater.

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

Methodology GIS Database:
- Groundwater Salinity, Statewide.
- Hydrographic Catchments - Catchments.
- Public Drinking Water Source Areas (PDWSAs).
- Topographic Contours, Statewide.

(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 limited amount of clearing proposed (20 hectares) in comparison with the extent of the Port Hedland coastal catchment area (which is approximately 744,301 hectares) is unlikely to result in an increase in peak flood height or flood peak duration.

The mean annual rainfall for the area is 400 millimetres, while the evaporation of the area is at around 3,500 millimetres per year (GIS Database). Therefore, it is unlikely that the proposed clearing will cause or exacerbate the incidence or intensity of flooding.

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

Methodology GIS Database:

- Evaporation Isopleths.
- Hydrographic Catchments.
- Rainfall, Mean Annual.

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

Comments

There are two native title claims over the areas under application. These claims have been registered with the National Native Title Tribunal (WC99_003 and WC99_008) (GIS Database). However, the land 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*. The potential impacts of the proposed clearing on flora and fauna are further addressed under the relevant clearing principles.

A heritage survey has been conducted for the proposed clearing areas, and no Aboriginal Sites of Significance have been identified (Dampier Salt, 2007). The nearest registered Aboriginal Heritage Site (ID 23285) is located approximately 550 metres north-east of the proposed areas to be cleared (GIS Database). This area underwent a Section 18 clearance, and was subsequently approved for disturbance in 2006 (Dampier Salt, 2007). It is the proponent's responsibility to ensure compliance with the *Aboriginal Heritage Act 1972* and to ensure that no Aboriginal Sites of Significance are disturbed as a result of the clearing process.

No relevant Environmental Impact Assessments have been conducted around the survey area.

Advice was sought from the EPA regarding referral of this proposal, due to the proposed clearing areas being within a townsite, and with two kilometres of the shore. The EPA has advised that the proposal does not need to be formally referred, and can be managed under Part V of the *Environmental Protection Act 1986*.

There have been two submissions received for this clearing permit. The issues raised in those submissions were:

1. Dampier Salt will be required to submit a Development Application to the Town of Port Hedland, unless they can provide evidence that an application is not required under their State Agreement Act;
2. Proponent should ensure that the clearing does not interfere with any Aboriginal sites, and that any clearing is undertaken in compliance with the *Aboriginal Heritage Act 1972*; and
3. Native vegetation is used by Aboriginal people for bush tucker and medicine, and subsequently should be retained as habitat for native fauna, to enable the hunting activities to continue.

A submission was received on 24 September 2006 from Dampier Salt to Address issues 2 and 3 raised above. The letter outlines that the area in question forms a part of Dampier Salt's principal mining lease, and is extensively used for its operations. The area was comprehensively surveyed in 2005 to identify any potential Aboriginal heritage sites. The survey involved the local Aboriginal group on ground. The letter also states that interested parties are invited by Dampier Salt to discuss any further concerns they have.

Dampier Salt is advised to liaise with the Town of Port Hedland to determine whether a Development Application is required for this project.

Clearing Permit 1869/1 was originally granted on 5 July 2007, with the Permit becoming live on 4 August 2007 and expiring on 4 August 2009.

The Permit has been amended to extend the duration of the Permit from 4 August 2007 to 31 July 2012. Additionally the Permits reporting and record keeping conditions have been modified to reflect standard wording and to align the permit reporting date with the permit expiration date.

Methodology Dampier Salt (2007).
GIS Database:
- Aboriginal Sites of Significance.
- Environmental Impact Assessments.
- Native Title Claims.

4. Assessor's recommendations

Comment

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

Should a clearing permit be granted, it is recommended that conditions be imposed on the permit for the purpose of weed management, erosion management and record keeping and permit reporting.

5. References

- Biota (2006a) *Port Hedland Solar Saltfield Expansion Botanical Survey - Flora and Vegetation Report*, prepared for Dampier Salt Ltd, North Perth, Western Australia.
- Biota (2006b) *Port Hedland Solar Saltfield Expansion Fauna Survey - Fauna and Faunal Assemblages Report*, prepared for Dampier Salt Ltd, North Perth, Western Australia.
- Dampier Salt (2007) *Application for a Purpose Clearing Permit on Mining Lease (State Agreement Act) ML250SA*, additional information, unpublished report, Belmont, 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.
- Department of the Environment and Water Resources (2007) *A Directory of Important Wetlands in Australia, Leslie (Port Hedland) Saltfields System - WA068*, <http://www.environment.gov.au>
- Environmental Protection Authority (EPA) *System 3 (1993) EPA Red Book Status Report*. Report 15 on the Conservation Reserves for Western Australia. Environmental Protection Authority, 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.
- Kendrick, P. and Stanley, F. (2001) *Pilbara 4 (PIL4 - Roebourne synopsis)*, in *Bioregional Summary of 2002 Biodiversity Audit for Western Australia*, edited by McKenzie, N.L., May, J.E. and McKenna, S. Department of Conservation and Land Management, Western Australia.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249 – updated 2005. Department of Agriculture, Western Australia.

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.

