



1. Application details

1.1. Permit application details

Permit application No.: 1355/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Apache Northwest Pty Ltd

1.3. Property details

Property: Territorial Sea Production Licence 2 (TL/2)
Local Government Area: Shire of Ashburton
Colloquial name: Airlie Island

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
13		Mechanical Removal	Petroleum 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>The vegetation on much of Airlie Island consists of low open <i>Acacia coriacea</i> shrubland, with coastal <i>Spinifex</i> sp. in the littoral zone. The western end of the island has extensive tussock grass coverage and few <i>Acacias</i> (DEH 2006b). 40 flora species have been recorded on the island. Of the 40 species recorded, 15 are annual species, 14 are perennial species, 10 are ephemeral species and one is a cryptophyte (a plant whose growth-points (buds) survive seasons with adverse conditions (e.g., cold seasons, dry seasons) below ground or under water).</p> <p>Two weed species currently occur on the island, Buffel grass (<i>Cenchrus ciliaris</i>) and Kapok (<i>Aerva javanica</i>), and two plants, <i>Abutilon lepidum</i> and <i>Ipomoea muelleri</i>, have been introduced from the adjacent mainland (Apache 2006).</p>	<p>Apache proposes to clear up to 13 hectares of native vegetation within the Apache production licence area on Airlie Island.</p> <p>The proposed clearing activities will include;</p> <ul style="list-style-type: none"> - The installation or upgrade of buildings. - Emergency activities such as the clearing of damaged vegetation or debris after storms/cyclones, and; - Clearing of native vegetation for fire risk reduction (Apache 2006). 	<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>Recent aerial photography (September 2006) shows that the total size of Airlie Island is approximately 29.4 hectares. Apache's production licence area on the eastern side of Airlie Island occupies approximately 15.7 hectares. Within this area 2.8 hectares is covered by site infrastructure and 5.9 hectares consists of non-vegetated beach. Approximately 7 hectares of vegetation remains within Apache's production licence area on Airlie Island (Apache 2006). As a result, the actual extent of the proposed clearing will be considerably less than the 13 hectares which has been applied to clear.</p>

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**
Airlie Island is a 'C' class Nature Reserve (Reserve 40323) vested in the Conservation Commission of Western Australia for the protection of flora and fauna (GIS database). The Island is situated within the Pilbara 4 (PIL 4)

Roebourne Interim Biogeographic Regionalisation for Australia (IBRA) subregion, which contains approximately 99.5% of its pre-European vegetation cover (Shepherd et al. 2001; Apache 2006; Kendrick and Stanley 2001). Airlie Island also forms part of the Exmouth Gulf and Rowley Shelf Islands Registered National Estate (DEH 2006). The National Estate encompasses an area of approximately 23,000 hectares and comprises of all islands and associated rocks, mangroves and reefs in the Exmouth Gulf and between and including the Muiron Islands in the west and Weld Island in the east (DEH 2006).

The total area covered by the Apache production licence on Airlie Island is 15.7 hectares, which accounts for 53% of the Island's 29.4 hectares. Approximately 2.9 hectares of native vegetation has already been cleared within the Apache production licence area, and this area is now covered by site infrastructure. Most of the flora in the Apache production licence area that is likely to be impacted on by the proposed clearing activities is dominated by Acacia, however, the western end of the Island has extensive tussock grass coverage and few Acacias (DEH 2006a). Two weeds species currently occur on the Airlie Island, Buffel grass (*Cenchrus ciliaris*) and Kapok (*Aerva javanica*), with Buffel grass already a dominant plant species on the Island. Both Buffel grass and Kapok are considered to have a high risk of impacting on the natural biodiversity of ecosystems (Apache 2006).

Apache has advised that the majority of the proposed clearing activities will be limited to areas surrounding existing infrastructure, and that undisturbed or intact expanses of vegetation within the clearing application area will be excluded from disturbance wherever possible (Apache 2006). Aerial photography shows that the vegetation outside of the clearing application area remains largely intact and undisturbed, apart from the presence of Buffel grass (Apache 2006; DEC 2006). Large areas of intact, contiguous vegetation are abundant on many of the surrounding islands throughout the region (Apache 2006).

To ensure that the impact to native vegetation is minimised or avoided where possible, Apache has stated that their Varanus Island Vegetation Management Plan (VMP) will be adapted for clearing activities on Airlie Island. The VMP has been prepared in consultation with the Department of Conservation and Land Management (Apache 2006; Apache 2006a). The management and planning of the proposed clearing activities is guided the following criteria (Apache 2006a).

- Does the area need to be cleared, that is, can the activity be undertaken on an area that is already cleared?
- Can the area to be cleared or disturbed be minimised?
- Are any significant areas likely to be impacted? If so, consider alternatives.

The Department of Environment and Conservation is supportive of Apache's proposal to submit a clearing permit application pertaining to the entire production licence area and has provided input into the production of the VMP which supports the clearing application. Given Apache's commitment to adhere to their VMP the proposal is not likely to impact on the biodiversity values of Airlie Island (DEC 2006).

With consideration to the above, the proposal is not likely to be at variance to this principle (DEC 2006).

Methodology Apache (2006)
Apache (2006a)
Cowan (2001)
DEC (2006)
DEH (2006)
DEH (2006a)
GIS Database:
- CALM Managed Lands and Waters - CALM 1/07/05
Kendrick and Stanley (2001)
Shepherd et al. (2001)

(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

Airlie Island forms part of the Exmouth Gulf and Rowley Shelf Islands Registered National Estate due its important habitat for many bird species which use the Island for nesting (DEH 2006). Up to 61 species of birds have been recorded on the Island during the Shearwater monitoring program, and weed monitoring and control program. Nesting populations of Osprey (*Pandion haliaetus*) and the Wedge-tailed Shearwater (*Puffinus pacificus*) exist on the Island (Apache 2006). Wedge-tailed Shearwaters are protected under the Japan-Australia Migratory Birds Agreement (JAMBA) (DEH 2006b). The western half of the Island is used by the Shearwaters for nesting, by digging their burrows, laying eggs and raising chicks in the soft sand among the low growing Acacias and spinifex (Apache 2006). Apache have stated no disturbance will occur within 10 metres of any Shearwater breeding area (Apache 2006; Apache 2006a). The proposed clearing will predominately involve minor disturbance within Apache's production licence area which is located on the eastern side of the island, therefore, the proposed clearing is unlikely to impact on Shearwater nesting sites.

Several of the bird species observed on Airlie Island including the Common Tern (*Sterna hirundo*), Great Knot (*Calidris tenuirostris*), Grey-tailed Tattler (*Tringa incana*) and Mongolian Sand Plover (*Charadrius mongolus*) are protected under the JAMBA and China-Australia Migratory Birds Agreement (CAMBA) (DEH 2006b);

Apache 2006). The proposed clearing area is not the species' primary habitat and these birds may disperse throughout the project and surrounding areas at different times of the year. Many of the islands within the Exmouth Gulf and Rowley Shelf Islands Registered National Estate are likely to provide suitable habitat for these species'. Due to the localised area applied to be cleared, the proposed clearing is unlikely to impact on key breeding and feeding habitat for these migratory bird species', or other bird species' which have been observed on the Island.

The Airlie Island Ctenotus (*Ctenotus angusticeps*) which is listed under Schedule 1 (Fauna that is rare or is likely to become extinct) of the WA Wildlife Conservation (Specially Protected Fauna) Notice 2005 is known to occur on the Island. The species is known from two widely separated localities in Western Australia; Airlie Island and Roebuck Bay, south of Broome (Kendrick and Stanley 2001; DEH 2006a). On Airlie Island the species is found in all habitat types, although appears to have a preference for tussock grass (DEH 2006a). The western end of the Island has extensive tussock grass coverage and few *Acacias* and is likely to provide suitable habitat for the Airlie Island Ctenotus (DEH 2006a). Approximately 11.3 hectares of intact vegetation remains outside of the clearing application area.

Apache does not intend to undertake broad scale clearing of the remaining 7 hectares of vegetation within the clearing application area. The majority of the proposed clearing activities are likely to involve minor disturbance around existing infrastructure. In order to minimise or avoid impact to vegetation where possible, Apache has stated that their Varanus Island Vegetation Management Plan (VMP) will be adapted for clearing activities on Airlie Island (Apache 2006; Apache 2006a). Given Apache's commitment to adhere to their VMP, and considering the abundance of suitable habitat throughout the clearing application area and the rest of the Island, the proposed clearing is not likely to impact on suitable habitat for the Airlie Island Ctenotus.

No native mammals or snakes have been recorded on the island (Apache 2006).

With consideration to the above, the proposal is not likely to be at variance to this principle (DEC 2006).

Methodology Apache (2006)
Apache (2006a)
DEC (2006)
DEH (2006)
DEH (2006a)
DEH (2006b)
Kendrick and Stanley (2001)

(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 CALM's Declared Rare Flora (DRF) and Priority Flora database there are no records of any populations of Rare or Priority flora within the application area (GIS database).

40 flora species have been recorded on Airlie Island. No DRF or Priority flora species have been recorded or are known to occur on Airlie Island (Apache 2006).

With consideration to the above, the proposal is not likely to be at variance to this principle (DEC 2006).

Methodology Apache (2006)
DEC (2006)
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

The vegetation within and adjoining the clearing application area on Airlie Island does not form part of any known Threatened Ecological Community (GIS database; Apache 2006).

With consideration to the above, the proposed clearing is not likely to be at variance to this principle (DEC 2006).

Methodology Apache (2006)
DEC (2006)
GIS Database:
- Threatened Ecological Communities - CALM 12/4/05

(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 likely to be at variance to this Principle

Airlie Island is a 'C' class Nature Reserve (Reserve 40323) vested in the Conservation Commission of Western Australia for the protection of flora and fauna (GIS database). The Island is situated within the Pilbara 4 (PIL 4) Roebourne Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) subregion, within which approximately 99.5% of the pre-European vegetation remains (Shepherd et al. 2001; Apache 2006). Recent aerial photography shows that within Apache's production licence area of 15.7 hectares, approximately 7 hectares of vegetated area remains. The remaining area consists of approximately 2.9 hectares which has already been cleared and is now covered by site infrastructure, and approximately 5.9 hectares which consists of non-vegetated beach area (Apache 2006). Outside of the Apache production licence area, the Island still remains vegetated and mostly undisturbed, apart from the presence of Buffel grass which Apache have endeavoured to control in consultation with the Department of Environment and Conservation (Apache 2006; DEC 2006). The vegetation within the proposed clearing area is not likely to be considered a remnant of native vegetation that has been extensively cleared.

Apache does not intend to undertake broad scale vegetation clearing of the remaining vegetation within the clearing application area. The clearing permit application pertaining to the entire production licence area simply aims to reduce time frames required for individual routine or unforeseen island maintenance activities that may have a short development timeframe (Apache 2006). In order to minimise or avoid impact to vegetation Apache has stated that their Varanus Island Vegetation Management Plan (VMP) will be adapted for clearing activities on Airlie Island (Apache 2006; Apache 2006a).

The Department of Environment and Conservation is supportive of Apache's proposal to submit a clearing permit application pertaining to the entire production licence area and has provided input into the production of the VMP which supports the clearing application (DEC 2006). The commitments within the VMP should ensure that undisturbed or intact expanses of vegetation within the clearing application area will be excluded from disturbance or clearing where possible (Apache 2006; Apache 2006a).

With consideration to the above, proposal is not likely to be at variance to this principle.

Methodology Apache (2006)
Apache (2006a)
DEC (2006)
Shepherd et al. (2001)

(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 defined wetlands or watercourses within the clearing application area (GIS database; Apache 2006), therefore, the proposal is not likely to be at variance to this principle.

Methodology Apache (2006)
GIS Database:
- Hydrography, linear - DOE 1/2/04
- Lakes, 1M - GA 01/06/00
- Rivers, 1M - GA 01/06/00

(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 proposed activities are likely to involve minor clearing around existing infrastructure, which as a result of historic clearing for construction and ongoing operations, is already covered by site infrastructure or in a disturbed condition. Apache has stated that it is not their intention to undertake broad-scale vegetation clearing and that undisturbed or intact expanses of vegetation within the Apache lease will be excluded from clearing wherever possible (Apache 2006). Much of the proposed clearing area lies over shallow soil with low relief. As a result of the above, wind and water erosion are unlikely to occur or be exacerbated by the proposed clearing activities either on-site or off-site.

The average annual rainfall for Airlie Island is 265 mm/yr and the mean annual evaporation at Onslow (nearest measured town approximately 35 kilometres south of the application area) is 3166 mm/yr (Apache 2006; BoM 2006). Given the Island's low rainfall/high evaporation rate there is little risk of the clearing increasing soil salinity or waterlogging within the lease area (Apache 2006).

Two weeds species, Buffel grass (*Cenchrus ciliaris*) and Kapok (*Aerva javanica*), and two plants, *Abutilon lepidum* and *Ipomoea muelleri*, have been introduced from the mainland. Both Buffel grass and Kapok are

considered to have a high risk of impacting on the natural biodiversity of ecosystems (Apache 2006). The presence of Buffel grass on Airlie Island threatens the natural plant communities by replacing, almost entirely, the understorey cover of the native grasses. Buffel grass has already become a dominant plant species on the Island (Apache 2006). Apache quarantine measures applied to all equipment arriving on the Island ensures a low chance of introducing weeds and pathogens to the island. Apache has supported a Buffel grass research program coordinated by the Kings Park and Botanic Garden Authority. Following the research phase of the project, the implementation phase commenced in 1999 with the direct herbicide spraying of Buffel grass. Regular weed control activities continue to be undertaken by qualified and experienced contractors (Apache 2006). All clearing activities will take place within the Apache production licence area will be guided by the Varanus Island Vegetation Management Plan which will be adapted for Airlie Island (Apache 2006; Apache 2006a). As a result, the risk of spreading weeds and pathogens outside of the Apache production licence area will be minimal.

The proposed vegetation clearing is not likely to cause appreciable land degradation risks, therefore, the proposal is not likely to be at variance to this principle.

Methodology Apache (2006)
Apache (2006a)
BoM (2006)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

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

The proposed clearing area lies within the Airlie Island C-Class Nature Reserve (Reserve 40323) which is vested by the Conservation Commission of Western Australia for the conservation of flora and fauna, and managed by the Department of Environment and Conservation (Apache 2006; GIS database). Airlie Island is also part of the Exmouth Gulf and Rowley Shelf Islands Registered National Estate as it provides important seabird nesting areas (DEH 2006).

Apache leases a portion of Airlie Island for the operation of petroleum receiving, processing and loading/export facilities. The total area of Apache's production licence on Airlie Island is 15.7 hectares which accounts for 53% of the Island's 29.4 hectares (Apache 2006). All of the proposed clearing activities will take place within the boundaries of Apache's production licence area. Within the production licence area approximately 2.9 hectares has already been cleared for existing site infrastructure and 5.9 hectares consists of non-vegetated beach area. Apache has advised that under the proposal it is not Apache's intention to undertake broad-scale clearing of the remaining 7 hectares of vegetation within the production licence area (Apache 2006).

Examination of aerial imagery shows that there has been little or no ground disturbance to the vegetation outside of Apache's production licence area. The proposed clearing is not likely to impact on the Island's conservation values, such as the Shearwater rookery protection areas outside of Apache's production licence area (Apache 2006). To ensure that the conservation values of the Nature Reserve and National Estate are maintained, the protection of Airlie Island's unique flora and fauna is guided by environmental management procedures, many of which are part of Apache's operating conditions on the DEC reserve. These include (Apache 2006);

- The collection of any plants or animal species is strictly forbidden, including collection of live shells.
- Firearms or fauna taking devices are banned.
- No pets are allowed on the Island and no imported plants can be grown. Strict quarantine rules apply to all personnel and goods transported to the island.
- Foot access outside the Apache production licence area is forbidden (allowed only on the beach tide lines), unless for biological studies.
- No vehicle can be operated outside the production licence area (except for fighting fire or for cleaning up oil spills).
- Existing tracks on the Island are left alone to allow for regeneration.
- All topsoil stockpiled shall be satisfactorily stabilised to prevent erosion.
- Apache shall not create a disturbance within 10 metres from any existing wedge-tailed shearwater nesting burrow.
- No personnel shall approach or enter any seabird nesting areas outside the production licence area unless for biological monitoring purposes.
- Annual reporting to DEC on monitoring results.

Further to Apache's operating conditions within the DEC reserve, Apache has stated that their Varanus Island Vegetation Management Plan (VMP) will be adapted for clearing activities on Airlie Island. The VMP will ensure that the impact to vegetation by the proposed clearing activities is minimised or avoided where possible (Apache 2006; Apache 2006a). Under the VMP the management and planning of the proposed clearing activities is guided the following criteria (Apache 2006a).

- Does the area need to be cleared, that is, can the activity be undertaken on an area that is already cleared?
- Can the area to be cleared or disturbed be minimised?
- Are any significant areas likely to be impacted? If so, consider alternatives.

DEC is supportive of Apache's proposal to submit a clearing permit application pertaining to the entire production licence area and has provided input into the production of the VMP which supports the clearing application. Given Apache's commitment to adhere to their VMP and CALM's operating conditions, the proposal is not likely to impact on the conservation values of Airlie Island (DEC 2006).

With consideration to the above, the proposal is not likely to be at variance to this principle.

Methodology Apache (2006)
Apache (2006a)
DEC (2006)
DEH (2006)
GIS Database:
- CALM Managed Lands and Waters - CALM 1/07/05

(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

Groundwater occurs as an unconfined aquifer within the sands and limestone beneath the Island. Groundwater is connected to the ocean and is subject to tidal influences. Apache undertakes regular groundwater testing to monitor groundwater quality on the Island (Apache 2006). The groundwater quality on Airlie Island is considered saline and has no current beneficial human uses. Minor quantities of clearing in already disturbed areas are not likely to result in changes to the height, flow or quality of the groundwater on Airlie Island.

There are no watercourses or wetlands on Airlie Island, therefore, it is anticipated that no impacts to surface water quality are likely to occur as a result of the proposed clearing activities (GIS database; Apache 2006).

With consideration to the above, the proposal is not likely to be at variance to this principle.

Methodology Apache (2006)
GIS Database:
- Hydrography, linear - DOE 1/2/04
- Lakes, 1M - GA 01/06/00
- Rivers, 1M - GA 01/06/00

(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

Airlie Island experiences an average annual rainfall of 265 mm, influenced significantly by the summer cyclone season, and the mean annual evaporation at Onslow (nearest measured town approximately 35 kilometres south of the application area) is 3166 mm (Apache 2006; BoM 2006). Flooding within the application area is only likely for short periods during and immediately following cyclonic events as any floodwaters will most likely to quickly infiltrate the soil surface. The small amount of vegetation proposed to be cleared is not likely to significantly influence the peak flood height or flood duration on Airlie Island.

With consideration to the above, the proposal is not likely to be at variance to this principle.

Methodology Apache (2006)
BoM (2006)

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

Comments

There is a native title claim over the area under application; WC99/045 (GIS database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the petroleum licence 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 sites of aboriginal significance within the proposed area to be cleared (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.

Apache has a current operating licence; 5241, granted in accordance with the *Environmental Protection Act 1986*. The licence is due to expire on 7 October 2009 (DoE 2006).

Apache does not have a ground or surface water licence for this property. The *Rights in Water and Irrigation Act*

1914 only applies to proclaimed areas and does not have any jurisdiction on offshore water use (DoE 2006).

The Shire of Ashburton has no objection to the proposed clearing being undertaken (Shire of Ashburton 2006).

Methodology DoE (2006)
GIS Database:
- Aboriginal Sites of Significance - DIA
- Native Title Claims - DLI 7/11/05
Shire of Ashburton (2006)

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Petroleum Production	Mechanical Removal	13	Grant- 7 hectares	<p>The clearing principles have been addressed and the proposed clearing is not likely to be at variance with principles a, b, c, d, e, f, g, h, i and j.</p> <p>The assessing officer recommends that the permit be granted for 7 hectares with the following conditions.</p> <ol style="list-style-type: none">1. The Permit Holder shall record the following for each instance of clearing:<ol style="list-style-type: none">a) the location of where the clearing occurred, expressed as grid coordinates using the Geocentric Datum of Australia 1994 coordinate system;b) the size of the area cleared in hectares, and;c) the dates on which the area was cleared.2. The Permit Holder shall provide a report to the Director, Environment, Department of Industry and Resources by 30 June each year, setting out the records required under condition 1 of this permit in relation to clearing carried out between 1 January and 31 December of the previous year.

5. References

- Apache (2006). Airlie Island - Supporting Documentation for a Native Vegetation Clearing Permit. Prepared by Apache Energy, May 2006.
- Apache (2006a). Varanus Island Vegetation Management Plan. Prepared by Apache Energy, April 2006.
- BoM (2006). Climate averages for Australian sites: Averages for Onslow, Bureau of Meteorology, Australia, viewed 15 May 2006, <<http://www.bom.gov.au/climate/averages/tables>>
- DEC (2006). Land clearing proposal advice. Advice to Native Vegetation Assessor, Native Vegetation Assessment Branch, Department of Industry and Resources. Department of Environment and Conservation. Perth, Western Australia. Advice received 19 October 2006.
- DEH (2006). Australian Heritage Database - Islands Exmouth Gulf and Rowley Shelf, Exmouth Gulf via Onslow, WA. A search for Airlie Island. Department of Environment and Heritage, Australia, viewed 12 September 2006, <<http://www.deh.gov.au/cgi-bin/ahdb/search.pl>>
- DEH (2006a). Species Profile and Threats Database, A search for *Ctenotus angusticep*. Department of Environment and Heritage, Australia, viewed 20 September 2006, <http://www.deh.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25937>
- DEH (2006b). Migratory Waterbirds, China-Australia Migratory Bird Agreement (CAMBA) and Japan-Australia Migratory Bird Agreement (JAMBA). Department of Environment and Heritage, Australia, viewed 20 September 2006, <<http://www.deh.gov.au/biodiversity/migratory/waterbirds/index.html>>
- Kendrick, P. and Stanley, F. (2001). Pilbara 4 (PIL 4- Roebourne synopsis) in 'A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002'. Report published by the Department of Conservation and Land Management, Perth, 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. Department of Agriculture, Western Australia (updated 2005).
- Shire of Ashburton (2006). Direct Interest Submission for CPS 1355/1. Letter addressed to Native Vegetation Assessor, Native Vegetation Branch, Department of Industry and Resources. Shire of Ashburton, Tom Price, 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.
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.
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.