



## 1. Application details

### 1.1. Permit application details

Permit application No.: 2548/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Chevron Australia Pty Ltd

### 1.3. Property details

Property: Petroleum Production Licence L 1H R1  
Local Government Area: Shire of Ashburton (Islands)  
Colloquial name: Barrow Island - Gorgon Project - geotechnical investigations

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
3.5		Mechanical Removal	Geotechnical Investigations

## 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 of Barrow Island has been mapped as two broad vegetation types: Beard Vegetation Associations 117 and 667 (GIS Database). Beard Vegetation Association 117 occurs at the southern end of the island and covers approximately 5% of the 23,500 ha island. The remainder of the island (approximately 22,000 ha), is recorded as Beard Vegetation Association 667: Hummock grasslands; shrub steppe; scattered shrubs over <i>Triodia wiseana</i> and <i>T. sp. indet. aff. angusta</i> (GIS Database; Shepherd et al., 2001).</p> <p>The area applied to clear is located on the eastern side of the island and falls within the area mapped as Beard Vegetation Association 667.</p> <p>In 1993, Mattiske and Associates mapped the vegetation of Barrow Island as 34 vegetation types, based on major landforms, soil type and species composition (Chevron, 2008). In 2002 Astron Environmental further refined these vegetation units, identifying 83 vegetation associations (Chevron, 2008).</p> <p>A flora survey of the proposed Gorgon development area, including the current clearing permit application area was conducted by Astron Environmental Services in September-October 2003, January, April and May 2004 (Chevron, 2008).</p> <p>The survey identified ten vegetation associations within the application area. The dominant vegetation associations within the area are:</p> <p><b>V1m:</b> Low Open Heath of <i>Melaleuca cardiophylla</i> with <i>Acacia bivenosa</i>, <i>Sarcostemma viminale</i> subsp. <i>australe</i> over Hummock Grassland of <i>Triodia wiseana</i> and <i>Triodia angusta</i> on limestone ridges and slopes;</p> <p><b>V1k:</b> Scattered <i>Hakea lorea</i> subsp. <i>Lorea</i> shrubs over Low Open Shrubland to Low Shrubland of <i>Melaleuca cardiophylla</i> over Hummock Grassland of <i>Triodia wiseana</i> with patchy <i>Triodia angusta</i> over low scattered <i>Acacia gregorii</i> shrubs on limestone hilltops and minor drainage lines; and</p>	<p>Chevron Australia Pty Ltd have applied to clear up to 3.5 hectares (ha) of native vegetation within a total application area of approximately 62 ha, for the purpose of conducting geotechnical investigations within the expanded footprint for the Gorgon gas plant proposed for Barrow Island (Chevron, 2008). The area of the proposed clearing (3.5 ha) is included in the 300 ha of clearing allocated to the Gorgon Project (Chevron, 2008). The geotechnical investigations are expected to comprise 20 boreholes approximately 20-50m deep. The drilling will occur progressively over a period of approximately 12 months, commencing in late 2008 (Chevron, 2008).</p> <p>The proposed clearing is for approximately 20 drill pads and associated access tracks. Drill pads will be made as small as possible to allow for safe operation of the drill rig and associated equipment, and are expected to be a maximum of approximately 35m x 35m (Chevron, 2008). Access tracks will be up to approximately 3.5 m wide, to allow for safe vehicle access (Chevron, 2008). Previously disturbed areas will be used wherever possible (Chevron, 2008).</p> <p>It is proposed that the vegetation along the access tracks will not be completely cleared, but rather will be slashed to a height of approximately 150mm. The slashed vegetation will be further damaged by heavy vehicles, associated with the geotechnical drilling programme, driving over the vegetation.</p>	<p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).</p>	<p>The vegetation condition was derived from vegetation surveys conducted by Astron Environmental Services in September-October 2003 and January 2004.</p>

**L3i:** Low Open Shrubland to Low Shrubland of *Acacia bivenosa* with occasional low scattered *Stylobasium spathulatum* and *Petalostylis labicheoides* shrubs over Hummock grassland of *Triodia angusta* with occasional *Triodia wiseana* on limestone slopes, small rises and flats.

No weed species were recorded within the application area (Chevron, 2008).

### 3. Assessment of application against clearing principles

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

##### Comments

##### **Proposal is at variance to this Principle**

Barrow Island is located approximately 70 km off the Pilbara coast and is the largest island of the Barrow Group. However the vegetation of Barrow Island is unlike that of any other island off the Pilbara coast, and is more closely related to that of the Cape Range area (Chevron, 2008; Conservation Commission, 2003). The Biodiversity Audit of Western Australia (CALM, 2002), classified Barrow Island as part of the Cape Range subregion of the Carnarvon Bioregion.

Barrow Island is an A Class Nature Reserve that has been recognised internationally for its extremely high biodiversity conservation values (Conservation Commission, 2003). With an area of approximately 23,500 ha, it is the second largest island off the Western Australian coast. It is an important refuge for marsupials, subterranean fauna and marine turtles (CALM, 2002). Barrow Island is best known for its abundant mammals, including several species that have either declined in numbers or become extinct on the mainland (Conservation Commission, 2003).

The waters adjacent to Barrow Island are listed on the Register of National Estate, for their natural values. The listed area includes the shoreline and beach slopes of the island (DEH, 2008).

However, Barrow Island is also the site of a large on-shore oil field, operational since the 1960's. The island is criss-crossed by numerous seismic lines and pipelines carrying oil from more than 400 oil wells operating on the island, to the storage tanks located on the eastern side of the island (Chevron, 2008; site visit, 2006).

Despite the oilfield development on the island, the biodiversity of Barrow Island has survived relatively intact, due in large part to the lack of introduced fauna species and few species of introduced flora (Conservation Commission, 2003). Quarantine procedures will be applied to the drilling rig and all other materials and equipment transported to the island for the geotechnical drilling programme (Chevron, 2008).

To date, approximately 5.2 % of the vegetation on Barrow Island has been disturbed for the development and operation of existing oilfield activities (Chevron, 2008). The Conservation Commission of WA (2003) considered that the extent of the existing clearing on the island was significant, and that the cumulative impacts of successive instances of clearing would, in the longer term, substantially diminish the biodiversity conservation values of Barrow Island Nature Reserve and the surrounding marine ecosystems.

The proposed geotechnical investigations will occur on the eastern side of the island within the revised footprint for the proposed Gorgon gas plant. Parts of the area proposed to clear has been previously disturbed by seismic surveys, with several old seismic lines crossing the application area (Chevron, 2008; GIS Database). Previously disturbed areas will be utilised wherever possible. The vegetation along access tracks is to be slashed to a height of 150mm and based on previous experience is expected to regenerate well (Chevron, 2008).

A total of 68 families, 180 genera and 406 vascular plant taxa have been recorded on Barrow island (Chevron, 2008). A flora survey of the proposed Gorgon development area, including the current clearing permit application area was conducted in accordance with EPA Guidance Statement 51 by Astron Environmental Services in September-October 2003 and January 2004. A further survey for ephemeral species was conducted in April and May 2004, following significant rainfall (Chevron, 2008). The flora surveys reported that the vegetation types found within the application area are well represented on the island (Chevron, 2008).

Fourteen weed species have been recorded on Barrow Island, however no weed species have been recorded within the application area (Chevron, 2008). Introduced species are a potential threat to biodiversity. If a permit is granted, it is recommended that a condition be imposed on the permit to prevent the introduction of weeds into the application area.

Fauna surveys of the proposed Gorgon development area reported that the site contained some restricted fauna habitats and high fauna species richness compared to some other parts of the island (Chevron, 2008).

Based on the above, the proposed clearing is at variance to this Principle. However, it is considered that the potential impacts of the proposed clearing on the biodiversity values of Barrow Island can be effectively managed and minimised through appropriate management practices and permit conditions. The area to be

cleared is relatively small, previously disturbed areas will be used wherever possible and the vegetation along access tracks is to be slashed, therefore minimising soil disturbance, and allowing the vegetation to regenerate from rootstock. Therefore, it is considered that the proposed clearing is unlikely to have any significant impact on the biological diversity of Barrow Island.

**Methodology** CALM (2002).  
Chevron (2008).  
Conservation Commission (2003).  
DEH (2008).  
GIS Database:  
- Barrow and Montebello Islands 80cm Orthomosaic  
- CALM Managed Lands and Waters

**(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**

Barrow Island supports a large number of fauna species, including several threatened species, and is widely recognised as an important refuge for terrestrial mammals which are either no longer found or are greatly reduced in numbers on the mainland (CALM, 2002; Conservation Commission, 2003). Six of the 14 terrestrial mammal species found on Barrow Island are listed in *Schedule 1 - Fauna that is rare or is likely to become extinct, of the Wildlife Conservation (Specially Protected Fauna) Notice 2008*, and are protected under the *Wildlife Conservation Act 1950*. These are the Burrowing Bettong (Boodie), *Bettongia lesueur* ssp. (WAM M10733); Barrow Island Golden Bandicoot, *Isodon auratus barrowensis*; Spectacled Hare Wallaby, *Lagorchestes conspicillatus conspicillatus*; Barrow Island Euro, *Macropus robustus isabellinus*; Black-flanked Rock Wallaby, *Petrogale lateralis lateralis*; and the Barrow Island Mouse, *Pseudomys nanus ferculinus*. Boodies, Golden Bandicoots, Spectacled Hare Wallabies and Euros are all widely distributed on the island. The Black-flanked Rock-Wallabies are largely restricted to the west coast of the island, where they shelter in rock-piles, cliffs and caves (Chevron, 2008). The proposed clearing is located on the eastern side of the island, and the small area and sparse nature of the proposed clearing is unlikely to have any significant impact on the habitats of any of the above species.

The beaches of Barrow Island are a significant nesting site for marine turtles, in particular the Green Turtle, *Chelonia mydas* and the Flatback Turtle, *Natator depressus* (CALM, 2002). The proposed clearing is located approximately 1.3 km from the coast, at its nearest point, and will not impact on any beach areas.

Other fauna known to occur on Barrow Island include more than 100 bird species including the rare Barrow Island Black and White Fairy-wren *Malurus leucopterus edouardi*; more than 40 reptile species including one endemic lizard species (*Ctenotus pantherinus acripes*); and a rich subterranean fauna (troglodites and stygofauna) of conservation significance.

Fauna surveys of the application area were conducted in accordance with EPA Guidance No.56 by Bamford Consulting Ecologists and Biota Environmental Sciences in 2003 and 2004 (Chevron, 2008). Terrestrial birds were surveyed twice a month within the proposed Gorgon project area along one kilometre long transects.

Vegetation associations V1m and V1k, which are widely distributed through the application area, contain *Melaleuca cardiophylla*, which was previously thought to be a significant habitat species for the Barrow Island Black and White Fairy-wren (Chevron, 2008). However, intensive surveys conducted in 2004 and 2005 to examine the habitat (and nesting habitat) preferences of the Barrow Island Black and White Fairy-wren confirmed that it utilises other flora species for nesting and feeding on the island (Bamford Consulting Ecologists and RPS BBG 2006, as cited in Chevron, 2008).

Mammals, reptiles and short-range endemics were surveyed by trapping grids established within the main vegetated habitat types. Burrowing Bettong warrens and larger mammals were surveyed using a systematic transect approach (Chevron, 2008).

Subterranean fauna were sampled from bores, drill holes and disused wells across Barrow Island using modified plankton haul nets (Chevron, 2008). However, subterranean fauna are unlikely to be impacted by the proposed vegetation clearing.

Only fauna habitats that are site restricted, for example pockets of dense vegetation, burrows, caves, termite mounds, are considered to be at risk from the proposed clearing. Fauna surveys of the proposed Gorgon development area reported that the overall site contained some restricted fauna habitats eg. bettong warrens, termite mounds and coastal cliffs suitable for nesting sites for birds of prey (Chevron, 2008). No bettong warrens or suitable nesting sites for birds of prey have been recorded within the current clearing permit application area, however termite mounds do occur within the application area (Chevron, 2008).

It is considered that the potential impacts on these fauna habitats can be adequately managed through conditions imposed on the clearing permit, and that the small area of proposed clearing is unlikely to have any significant impact on the fauna habitats within the application area.

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

**Methodology** CALM (2002).  
Chevron (2008).  
Conservation Commission (2003).

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

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

There are no known populations of Declared Rare Flora on Barrow Island (Chevron, 2008; GIS Database). Two species of Priority flora have been recorded on the island: *Corchorus congener* (P3), and *Helichrysum oligochaetum* (P1) (Chevron, 2008; GIS Database).

A flora survey of the proposed Gorgon development area, including the current clearing permit application area was conducted by Astron Environmental Services in September-October 2003 and January 2004. A further survey for ephemeral species was conducted in April and May 2004, following significant rainfall (Chevron, 2008).

*C. congener* (P3) was been recorded at several locations within the area applied to clear (Chevron, 2008). This species is well distributed in other parts of the island in a range of vegetation communities, and is known to regenerate well following disturbance (Chevron, 2008). Disturbance to *C. congener* should be avoided where practicable, however the clearing of some plants is unlikely to have any significant impact on the overall population of this species on Barrow Island.

*Helichrysum oligochaetum* was recorded twice by Mattiske in 1993, but has not been recorded since, despite intensive searching (Chevron, 2008). No plants of this species were found during the vegetation survey of the proposed Gorgon development area (Chevron, 2008).

The proposed clearing is not likely to have any impact on the continued existence of any species of Declared Rare or Priority flora.

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

**Methodology** Chevron (2008).  
GIS Database:  
- Declared Rare and Priority Flora List

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

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

There are no known Threatened Ecological Communities (TEC's) on Barrow Island (GIS Database).

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

**Methodology** 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**

Barrow Island lies off the Pilbara coast, however the vegetation of the island is more closely related to that of the Cape Range area. Accordingly, the Western Australian Biodiversity Audit (CALM, 2002), classified Barrow Island as falling within the Cape Range subregion of the Carnarvon Bioregion. Shepherd et al. (2001) report that approximately 99.8% of the pre-European vegetation still exists in the IBRA Carnarvon Bioregion. The vegetation of the area applied to clear is broadly mapped as Beard Vegetation Association 667: Hummock grasslands; shrub steppe; scattered shrubs over *Triodia wiseana* and *T. sp. indet. aff. angusta* (GIS Database; Shepherd et al., 2001). Shepherd et al. (2001) report that approximately 89.7% of the pre-European extent of this vegetation association still exists.

Barrow Island covers an area of approximately 23,500 ha. To date, approximately 5.2 % or approximately 1223 ha of the vegetation on Barrow Island has been disturbed for the development and operation of existing oilfield activities (Chevron, 2008). The proposed clearing will disturb up to 3.5 ha of native vegetation, which represents approximately an additional 0.015% of the total vegetation of the island. As the island has not been extensively cleared, the proposed vegetation clearing is not at variance to this principle.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves
IBRA Bioregion - Carnarvon	8,382,975	8,369,554	~99.8	Least Concern	3.6
Beard vegetation associations - WA					
667	22,862	20,500	~89.7	Least Concern	97.3
Beard vegetation associations - Carnarvon Bioregion					
667	21,841	20,341	~93.1	Least Concern	99.7

\* Shepherd et al. (2001) updated 2005

\*\* Department of Natural Resources and Environment (2002)

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

**Methodology** CALM (2002).  
Chevron (2008).  
Dept of Natural Resources and Environment (2002).  
Shepherd et al. (2001).  
GIS Database:  
- Interim Biogeographic Regionalisation of Australia  
- Pre-European Vegetation

**(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

**Comments Proposal is at variance to this Principle**

There are no permanent watercourses or waterbodies on Barrow Island (Chevron, 2008; GIS Database).

There are two minor seasonal watercourses (shallow drainage lines) within the application area (Chevron, 2008; GIS Database). These drainage lines are dry for most of the year, only flowing briefly following significant rainfall events (Chevron, 2008).

Based on the above, the proposed clearing is at variance to this Principle. However, the minor nature of the vegetation disturbance required for the proposed geotechnical drilling is unlikely to have any significant impact on these watercourses.

**Methodology** Chevron (2008).  
GIS Database:  
- Hydrography, Linear

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

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

The proposed clearing of up to 3.5 ha consists of approximately 20 drill pads and associated access tracks, distributed over a total application area of approximately 62 ha. Previously disturbed areas will be used wherever possible (Chevron, 2008). The vegetation along the access tracks will be slashed to a height of approximately 150 mm (Chevron, 2008), which will preserve the plant rootstocks and reduce the likelihood of erosion.

The relatively small areas of clearing, scattered over a total area of approximately 62 ha are unlikely to cause appreciable land degradation.

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

**Methodology** Chevron (2008).

**(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 at variance to this Principle**

Barrow Island is an A Class Nature Reserve managed for the purposes of conservation by the Department of Environment and Conservation. The reserve is recognised as having extremely high biodiversity conservation values (Conservation Commission, 2003).

The island and surrounding waters are also listed for their natural values on the Register of the National Estate (DEH, 2008; GIS Database). The Barrow Island Marine Park adjoins the western coastline of Barrow Island (GIS Database). The Marine Park will not be impacted by the proposed clearing, which is located on the eastern side of the island, approximately 1.3 km from the eastern coast, at its nearest point.

The Barrow Island Nature Reserve covers approximately 23,500 ha (Chevron, 2008). The proposed clearing is at variance to this principle, however the area of proposed vegetation disturbance (3.5 ha) represents a very small percentage of the total area of the Nature Reserve, and it is considered that the proposed clearing can be adequately managed to minimise impacts on the environmental values of any conservation areas. The minor and temporary nature of the vegetation disturbance, for geotechnical drilling, is unlikely to have any significant impact on the environmental values of the Nature Reserve or any nearby conservation area.

**Methodology** Chevron (2008).  
Conservation Commission (2003).  
DEH (2008).  
GIS Database:  
- CALM Managed Lands and Waters

**(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**

Barrow Island has an arid sub-tropical climate, with an average annual rainfall of 320mm (Chevron, 2008). Rainfall is highly variable and frequently associated with cyclones, which occur between November and March (Chevron, 2008).

There are no permanent watercourses or waterbodies within the application area (GIS Database), and the proposed clearing is unlikely to significantly alter surface water flows. The proposed clearing is unlikely to cause deterioration in the quality of any surface water.

The groundwater level over most of the island is close to sea level (Chevron, 2008). Hence the groundwater depth ranges from nil at the coast, up to approximately 50m on higher landforms in the centre of the island. An extensive brackish to saline shallow aquifer is known to exist in the limestone karst system of the island (above the watertable) (Chevron, 2008). The small areas of proposed vegetation disturbance for drill pads and access tracks, spread over a larger application area, is unlikely to have any impact on groundwater levels or quality.

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

**Methodology** Chevron (2008).  
GIS Database:  
- Hydrography, Linear

**(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**

Barrow Island has an arid, sub-tropical climate, and receives variable summer and winter rainfall (CALM, 2002). The region is prone to seasonal cyclones and natural flooding may occur occasionally during the wet season (November to March). There are two minor, seasonal creeklines located within the application area (GIS Database), however these watercourses are dry for most of the year, only flowing briefly following significant rainfall events (Chevron, 2008).

The small area of proposed clearing is not likely to cause or exacerbate the incidence or intensity of flooding.

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

**Methodology** CALM (2002).  
Chevron (2008).  
GIS Database:  
- Hydrography, Linear

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

### Comments

There are no known native title claims registered over Barrow Island (GIS Database).

There is one Aboriginal site of significance recorded as occurring over part of the clearing permit application area (GIS Database). This site (ID 8951) has been classified by the Department of Indigenous Affairs as Archived/Stored Data (GIS Database), and does not currently meet the criteria for recognition under the *Aboriginal Heritage Act 1972*. 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.

A water licence will not be required for this project, as *The Rights in Water and Irrigation Act 1914* has no jurisdiction on offshore islands (DoW, 2008).

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

The proposed geotechnical investigations are preliminary work associated with the Gorgon Gas development project. The revised project is currently under assessment by the EPA. The EPA considers the geotechnical investigations to be minor and preliminary and in accordance with the provisions of section 41A(3) of the *Environmental Protection Act 1986*, the EPA has consented to this work being undertaken prior to the decision on the revised Gorgon Gas proposal (EPA, 2008).

**Methodology** EPA (2008).  
DoW (2008).  
GIS Database:  
- Aboriginal Sites of Significance.  
- Native Title Claims.

## 4. Assessor's comments

### Comment

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

Due to the small size of the area applied to clear (3.5 ha) and the minor and temporary nature of the proposed vegetation clearing, the Assessing Officer concludes that the environmental impacts are likely to be minimal.

Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, flora and fauna management, record keeping and permit reporting.

## 5. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- Chevron (2008) Gorgon Project. Phase 3 Onshore Geotechnical Drilling Program. Application to Clear Native Vegetation. Chevron Australia Pty Ltd, Western Australia.
- Conservation Commission (2003) Biodiversity values on Barrow Island Nature Reserve and the Gorgon Gas Development. Advice to the Government from the Conservation Commission of Western Australia. Perth, Western Australia.
- DEH (2008) Australian Heritage Database. Department of the Environment and Heritage, ACT.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- DoW (2008) Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR). Department of Water, Western Australia.
- EPA (2008) Gorgon Expansion Investigative Works. A letter from EPA to Chevron Australia Pty Ltd. 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.
- 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).

## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<b>CALM</b>	Department of Conservation and Land Management, Western Australia.
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia.
<b>DA</b>	Department of Agriculture, Western Australia.
<b>DEC</b>	Department of Environment and Conservation
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DoE), Western Australia.
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia.
<b>DoE</b>	Department of Environment, Western Australia.
<b>DoIR</b>	Department of Industry and Resources, Western Australia.
<b>DOLA</b>	Department of Land Administration, Western Australia.
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environment Protection Act 1986, Western Australia.
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
<b>GIS</b>	Geographical Information System.
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia.
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>RIWI</b>	Rights in Water and Irrigation Act 1914, Western Australia.
<b>s.17</b>	Section 17 of the Environment Protection Act 1986, Western Australia.
<b>TECs</b>	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.