



1. Application details

1.1. Permit application details

Permit application No.: 1209/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Chevron Australia Pty Ltd

1.3. Property details

Property: L 1H R1
Local Government Area:
Colloquial name: Barrow Island – CO2 seismic pilot study

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
4		Mechanical Removal	Miscellaneous

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 proposed to clear is an area of up to 4 ha, for the purpose of undertaking a 2D seismic survey to investigate the optimum seismic techniques for monitoring the carbon dioxide (CO2) reinjection which has been planned as part of the Gorgon gas project proposed for Barrow Island (Chevron, 2006). The area of the proposed clearing (4 ha) is included in the 300 ha of clearing allocated to the Gorgon Project (Chevron, 2006).</p>	<p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)</p>	<p>The proposed seismic pilot survey is expected to take approximately 4 - 6 weeks to complete, and the work has been scheduled for between August and November 2006 (Chevron, 2006).</p>
<p>The areas proposed to clear are located in the central and north-eastern part of the island and fall within the area mapped as Beard Vegetation Association 667. In 2001, Shepherd et al. reported that there was approximately 100% of the original extent of this vegetation type remaining, all of which occurred within reserves.</p>	<p>The proposed clearing is for two seismic lines, running approximately parallel to each other. It is proposed to slash the vegetation to a height of 150mm. The slashed vegetation will be damaged by heavy vehicles, associated with the seismic survey programme, driving over the vegetation. At various intervals along the proposed seismic lines, the slashed vegetation will be further damaged by the Vibroseis vibrator pads (1.3 m diameter), accelerated weight drop equipment, and drilling activities associated with the seismic survey programme. The vegetation will be disturbed to a maximum width of approximately 3.5 m along each of the proposed seismic lines, to allow for safe vehicle access (Chevron, 2006).</p>		<p>The assessing officer conducted a site inspection of the areas applied to clear on 15th March 2006.</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.</p>			
<p>A flora survey of the areas applied to clear was conducted by RPS Bowman Bishaw Gorham in November and December 2005 (RPS Bowman Bishaw Gorham, 2006a). The survey recorded eleven vegetation types, which included eight limestone communities (L1b, L1f, L1i, L3a, L3i, L3r, L4a, L7b), two minor drainage line communities (D2r, D2s), and one valley community (V1b): D2r: Low Open Shrubland of <i>Acacia gregorii</i> with scattered <i>Trichodesma zeylanicum</i>, <i>Indigofera monophylla</i> and <i>Solanum lasiophyllum</i> with Hummock Grassland of <i>Triodia angusta</i> and scattered <i>Triodia wiseana</i> on pale orange brown sandy loamy gravelly lower slopes with little limestone outcropping.</p>	<p>The two proposed seismic lines commence in approximately the middle of the island and run in a north-easterly direction. One line is approximately 5km long, and the other is approximately 10 km long. The longer of the two lines finishes approximately 50m from the coastline within an existing cleared area at the barge landing known as WAPET Landing, on the north-eastern side of the island.</p>		

D2s: Shrubland of *Acacia pyrifolia* over Scattered Low Shrubland of *Stylobasium spathulatum*, *Petalostylis labicheoides*, *Indigofera monophylla* over Closed Hummock Grassland of *Triodia angusta* on deeper sands in minor drainage lines.

L1b: Scattered Low Trees of *Ficus brachypoda* over scattered low shrubs of *Pentalepis trichodesmoides* over Hummock Grassland of *Triodia wiseana* on limestone slopes and ridges.

L1f : Scattered Low Trees of *Ficus brachypoda*, *Mallotus nesophilus* and *Pittosporum phylliraeoides* over Closed Hummock Grassland of *Triodia wiseana* with scattered *Triodia angusta*, on shallow soils on limestone slopes and flats.

L1i: Scattered Low Trees of *Ficus brachypoda* over Scattered Low Shrubs of *Acacia bivenosa* and *Tephrosia rosea* over hummock grassland of *Triodia wiseana* on red brown sandy loamy slopes with limestone outcropping.

L3a: Low Open Shrubland of *Stylobasium spathulatum* with *Petalostylis labicheoides* over Closed Hummock Grassland of *Triodia angusta* with patchy *Triodia wiseana* over Low Open Shrubland of *Acacia gregorii* on limestone slopes and ridges.

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.

L3r: Low Open Shrubland of *Petalostylis labicheoides* with Scattered Low Shrubs of *Trichodesma zeylanicum* and often *Acacia gregorii* over Hummock Grassland of *Triodia wiseana* often with some *Triodia angusta* on orange brown sandy loam lower slopes.

L4a: Open Shrubland of *Acacia pyrifolia* over Low Open Shrubland of *Acacia bivenosa* with scattered *Petalostylis labicheoides* and *Stylobasium spathulatum* over Hummock Grassland of *Triodia wiseana* on limestone ridges and midslopes with patches of *Triodia angusta*. This unit contains occasional *Hakea lorea* subsp. *lorea*.

L7b: Shrubland to Open Shrubland of *Melaleuca cardiophylla* over Hummock Grassland to Closed Hummock Grassland of *Triodia wiseana* with patches of *Triodia angusta* over low scattered *Acacia gregorii* shrubs on limestone ridges, upper slopes and flats with red sands or orange clays. This community is disturbed in parts.

V1b: Low Open Shrubland of *Acacia bivenosa* with *Petalostylis labicheoides* over Hummock Grassland of *Triodia wiseana* and some *Triodia angusta* over Low Open Shrubland of *Diplopeltis eriocarpa* on red/brown sandy flats.

The locations of the seismic lines have been selected to utilise previously cleared areas. The northern half of the longer of the two lines follows an existing established road to the barge landing. It is anticipated that this section of the seismic survey can be conducted on the existing road, and it is unlikely that any roadside vegetation will be disturbed. The two proposed seismic lines were used in a previous 3D seismic survey conducted by West Australian Petroleum Pty Ltd (WAPET) in 1994. The vegetation was disturbed for the previous seismic survey, but has since regenerated to varying extents along the length of the two proposed seismic lines (Chevron, 2006; site visit, 2006).

The majority of the vegetation applied to clear has suffered previous disturbance due to access tracks, pipelines, and earlier seismic surveys.

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 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).

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, 2006; 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).

To date, approximately 5.2 % of the vegetation on Barrow Island has been disturbed for the development and operation of existing oilfield activities (Chevron, 2006). 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 CO2 Seismic Pilot Programme is expected to take approximately four to six weeks to complete (Chevron, 2006). The majority of the area proposed to clear has been previously disturbed by roads, access tracks, pipelines and earlier seismic surveys. Much of the vegetation to be disturbed is regrowth following a previous seismic survey conducted in 1994 (Chevron, 2006). The vegetation is to be slashed to a height of 150mm and is expected to regenerate well. Flora and fauna surveys conducted over the areas applied to clear, reported that the vegetation types and fauna habitats found within the application areas are all well represented on the island. The surveys concluded that the proposed clearing is not expected to have any significant impact on any flora or fauna of conservation significance or any critical fauna habitats (RPS Bowman Bishaw Gorham, 2006a; 2006b). Therefore, although the proposal is at variance to this principle, it is considered that the proposed clearing is unlikely to have any significant impact on the biological diversity of Barrow Island.

CALM advises that it would appear unlikely that this proposal would be seriously at variance to any of the relevant biodiversity principles given that the area to be cleared is relatively small, existing tracks or seismic lines are to be used wherever possible and the vegetation is to be slashed at a height of 150mm, therefore minimising soil disturbance, which is conducive to plants regenerating from rootstock (CALM, 2006).

Methodology CALM (2002).
CALM (2006).
Chevron (2006).
Conservation Commission (2003).
RPS Bowman Bishaw Gorham (2006a).
RPS Bowman Bishaw Gorham (2006b).

(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). Other fauna known to occur on Barrow Island include over 100 bird species, many reptile species, and subterranean fauna species of international significance. The beaches of Barrow Island are a significant nesting site for marine turtles, in particular the Green Turtle, *Chelonia mydas* (R) and the Flatback Turtle, *Natator depressus* (R) (CALM, 2002).

The proposed seismic survey is to be conducted in the central and north-eastern parts of the island, and will not impact on any beach habitat.

Subterranean fauna are considered unlikely to be impacted by the proposed vegetation clearing (RPS Bowman Bishaw Gorham, 2006b). Any potential impacts from the proposed seismic and drilling activities fall outside the scope of the clearing permit assessment and will be addressed by the proponent in their Environmental Management Plan (EMP) for the seismic project, which must be approved by DoIR's Petroleum Environment Branch, prior to commencement of the CO2 seismic pilot study.

A fauna survey of the proposed clearing areas was conducted in accordance with EPA Guidance Statement 56, by Bamford Consulting Ecologists and RPS Bowman Bishaw Gorham in October 2005 and February 2006. Only fauna that are site restricted, for example species living in burrows or natural rock holes, were considered to be at risk from the proposed clearing. The survey concentrated on identifying potentially unique fauna habitats and site-restricted species, in particular warrens of the Burrowing Bettong (Boodie) *Bettongia lesueur* ssp. (R), caves and cliffs (rock-wallaby habitat), termite mounds, rock holes, dense shady vegetation, and restricted vegetation types (RPS Bowman Bishaw Gorham, 2006b).

Three active Burrowing Bettong warrens were located during the survey, and two other warrens are known to occur in the vicinity of the barge landing area, near the northern end of the longer of the two proposed seismic lines. The nearest warren was approximately 60m from the area proposed to clear. Other mammals of conservation significance recorded during the survey included the Barrow Island Euro, *Macropus robustus isabellinus* (R), and the Barrow Island Spectacled Hare-wallaby, *Lagorchestes conspicillatus conspicillatus* (R) (RPS Bowman Bishaw Gorham, 2006b).

The Barrow Island Black and White Fairy-wren, *Malurus leucopterus edouardi* (R), was recorded during the survey, and is known to prefer *Melaleuca cardiophylla* habitat (RPS Bowman Bishaw Gorham, 2006a; 2006b). Several clumps of *Ficus brachypoda* and thickets of *Melaleuca cardiophylla*, both important fauna habitat species, were recorded in close proximity to the proposed seismic lines, however no specimens of either plant species were recorded within the areas applied to clear (RPS Bowman Bishaw Gorham, 2006a).

The fauna assemblages observed in the survey areas were typical for Barrow Island. The fauna survey report concluded that all the fauna habitats found within the application areas were well represented on the island, and that the areas proposed to clear represent a very small proportion of the available habitat. No fauna species were expected to be restricted to the areas proposed to clear. The linear nature of the proposed disturbance, in areas of vegetation which have been previously disturbed, is expected to result in only minor loss of fauna habitat (RPS Bowman Bishaw Gorham, 2006b). As the vegetation disturbance will entail slashing of the vegetation, which will preserve the plant rootstocks, the disturbed fauna habitats are expected to regenerate quickly (RPS Bowman Bishaw Gorham (2006a).

CALM advises that the proposed clearing is unlikely to disturb any fauna habitats of significance (CALM, 2006).

Therefore the proposed clearing is considered not likely to be at variance to this principle.

Methodology CALM (2002).
CALM (2006).
Conservation Commission (2003).
RPS Bowman Bishaw Gorham (2006a).
RPS Bowman Bishaw Gorham (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

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, 2006; 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. The flora of the island has been extensively surveyed, and a total of 406 plant taxa have been recorded, including fourteen introduced species (Chevron, 2006).

A flora survey of the areas applied to clear was conducted in accordance with EPA Guidance Statement 51 by RPS Bowman Bishaw Gorham in November and December 2005 (RPS Bowman Bishaw Gorham, 2006a). The survey covered a 100m wide corridor centred along the alignment of the proposed seismic survey lines. The survey recorded eleven vegetation types, which included eight limestone communities, two minor drainage line communities and one valley community. Several areas within the flora survey area had suffered previous disturbance from access tracks, pipelines, and earlier seismic surveys. A total of 48 flora species were recorded within the survey area, and no weed species were recorded.

All eleven vegetation types are well represented outside the areas applied to clear, and none of the vegetation types contained any restricted species (RPS Bowman Bishaw Gorham, 2006a).

There are no known populations of Declared Rare flora on Barrow Island. Two species of Priority flora occur on the island; *Corchorus congener* (P3), and *Helichrysum oligochaetum* (P1) (Chevron, 2006). *C. congener* (P3) was located at a number of locations within the areas applied to clear, in sites previously disturbed by seismic surveys conducted in 1994. 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 (RPS Bowman Bishaw Gorham, 2006a). The slashing of *C. congener* plants along the proposed seismic lines poses no threat to the overall population of this species on Barrow Island, and the damaged plants are expected to successfully regenerate (RPS Bowman Bishaw Gorham, 2006a).

The areas of vegetation proposed to clear are not considered to be necessary for the continued existence of any species of Declared Rare or Priority flora (CALM, 2006).

Methodology CALM (2002).
CALM (2006).
Chevron (2006).
Conservation Commission (2003).
RPS Bowman Bishaw Gorham (2006a).

(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).

Therefore the proposed clearing is unlikely to impact on any TEC.

Methodology GIS Database: Threatened Ecological Communities - CALM 12/04/05.

(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 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 100% 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). In 2001 Shepherd et al., reported that there was approximately 100% of this vegetation type remaining, all of which was in reserves.

Barrow Island covers an area of approximately 23,500 ha. To date, approximately 5.2 % or 1223 ha of the vegetation on Barrow Island has been disturbed for the development and operation of existing oilfield activities (Chevron, 2006). The proposed clearing will disturb up to 4 ha of previously disturbed vegetation, which represents an additional approximately 0.017% 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**	% in reserves/CALM-managed land
IBRA Bioregion - Carnarvon Shire of Ashburton (Islands)	8,523,963*	8,523,963*	100%	Least concern	
	No information available				
Beard vegetation association - 667	19,949	19,949	~100%	Least concern	100%

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002)

Methodology CALM (2002).
Chevron (2006).
Dept of Natural Resources and Environment (2002).
GIS Database:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00.
- Pre-European Vegetation - DA 01/01.
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 permanent watercourses or waterbodies on Barrow Island (Chevron, 2006; GIS Database). One of the proposed seismic lines will cross a minor seasonal creekline. This section of the proposed seismic line has been previously used as an access track, and very little vegetation remains within the vicinity of the creekline (Chevron, 2006).

The proposed clearing of a total of approximately 4 ha is unlikely to have any significant impact on this or any other watercourse or wetland, and is therefore considered not likely to be at variance to this principle.

Methodology Chevron (2006).
GIS Database: Hydrography, Linear - DoE 1/2/04.

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

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

The proposed vegetation disturbance will entail slashing of the vegetation to a height of 150 mm (Chevron, 2006), which will preserve the plant rootstocks and reduce the likelihood of erosion.

Under a condition imposed on this clearing permit, the proponent is required to implement weed control measures to prevent the spread of weeds from elsewhere on the island into the areas proposed to clear. The proposed weed control measures will be described by the proponent in their Environmental Management Plan (EMP) for the CO2 Seismic pilot project, which must be approved by DoIR's Petroleum Environment Branch prior to commencement of the CO2 Seismic pilot study.

Considering the minor and temporary nature of the proposed vegetation disturbance, it is unlikely to cause appreciable land degradation.

Methodology Chevron (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 at variance to this Principle

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

The island and surrounding waters are also listed for natural values on the Register of the National Estate (DEH, 2006).

The Barrow Island Nature Reserve covers approximately 23,500 ha (Chevron, 2006). Flora and fauna surveys of the areas applied to clear have not identified any unique or significant environmental values within the application areas (RPS Bowman Bishaw Gorham, 2006a; 2006b). The proposal is at variance to this principle, however the area of proposed vegetation disturbance (4 ha) represents a very small percentage of the total area of the Nature Reserve. The minor and temporary nature of the vegetation disturbance, in previously disturbed sites, is unlikely to have any significant impact on the environmental values of this or any nearby conservation area.

Methodology Chevron (2006).
Conservation Commission (2003).
DEH (2006).
RPS Bowman Bishaw Gorham (2006a).
RPS Bowman Bishaw Gorham (2006b).

(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

One of the proposed seismic lines crosses a minor seasonal creekline (RPS Bowman Bishaw Gorham, 2006a). This section of the proposed seismic line has been previously used as an access track, and very little vegetation remains within the vicinity of the creekline (Chevron, 2006). The minimal additional clearing is unlikely to have any significant impact on the surface water flows into this creekline.

The proposed clearing is unlikely to cause deterioration in the quality of any surface or underground water.

Methodology RPS Bowman Bishaw Gorham (2006a).

(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). One minor seasonal creekline crosses the area applied to clear (GIS Database), however the proposed clearing is not likely to have any impact on the water flows of this creekline.

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

Methodology CALM (2002).
GIS Database - Hydrography, Linear - DOE 01/02/04.

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

Comments

There are no known native title claims registered over Barrow Island.

The majority of the area proposed to clear falls within a Registered Indigenous Heritage Site: Barrow Island (ID 8951). 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.

Chevron Australia Pty Ltd has a current operating licence (4467) granted in accordance with the *Environmental Protection Act 1986*. The proposed clearing is not at variance to this licence, however the licence is due for review in 2006 (DoE, 2006).

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 (DoE, 2006).

The proposed CO2 seismic pilot programme is preliminary work associated with the Gorgon Gas development project, recently assessed by the EPA. The EPA has recommended to the Minister for Environment, Racing and Gaming that the Gorgon proposal should not be accepted in its current form (EPA, 2006a), and appeals against the EPA's recommendations are currently under consideration by the Appeals Convenor. However the EPA considers the work associated with the proposed CO2 seismic pilot programme 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 final decision on the Gorgon Gas proposal (EPA, 2006b).

Methodology DoE (2006).
EPA (2006a).
EPA (2006b).
GIS Database:
- Aboriginal Sites of Significance - DIA 04/07/02.
- Native Title Claims - DLI 19/12/04.

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Miscellaneous	Mechanical Removal	4	Grant	<p>The proposal has been assessed against the Clearing Principles, and is at variance to the following Principles: (a) biological diversity; (h) conservation areas.</p> <p>However, due to the small size of the area applied to clear (4ha) and the minor and temporary nature of the proposed vegetation clearing, in previously disturbed areas, the Assessing Officer concludes that the environmental impacts are likely to be minimal.</p> <p>Consequently, the Assessing Officer recommends that the Clearing Permit be granted subject to the following condition:</p> <ol style="list-style-type: none">1. The Permit Holder shall implement appropriate weed control measures to prevent the establishment of weeds within the Clearing Permit Areas (as shown on the attached Plan 1209/1).

5. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- CALM (2006) Land clearing proposal advice. Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR). Department of Conservation and Land Management, Western Australia.
- Chevron (2006) CO2 Seismic Pilot 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 (2006) 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.
- DoE (2006) Water Allocation/Licence Advice. Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR). Department of Environment, Western Australia.
- EPA (2006a) Gorgon Gas Development Barrow Island Nature Reserve, Chevron Australia. Report and recommendations of the Environmental Protection Authority, Western Australia.
- EPA (2006b) Variation to Gorgon Project 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.
- RPS Bowman Bishaw Gorham (2006a) Flora and vegetation assessment of Seismic Pilot Study routes on Barrow Island. RPS Bowman Bishaw Gorham Environmental Management Consultants, Western Australia.
- RPS Bowman Bishaw Gorham (2006b) Technical Report: Assessment of fauna sensitivities for 2D Seismic Survey on Barrow Island. Prepared by MJ & AR Bamford Consulting Ecologists for RPS Bowman Bishaw Gorham Environmental Management Consultants, 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.

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.