



1. Application details

1.1. Permit application details

Permit application No.: 1124/1
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: Shire of Ashburton (Islands)
Colloquial name: Gorgon Project - HDD pilot study

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.5		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 areas proposed to clear are located on the northwest 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 area proposed to clear at North White's Beach is located above the high water mark on coastal sand-dunes, and the vegetation coverage of the area is predominantly sparse hummock grassland. The vegetation of the southern road corner is predominantly dense hummock grassland and the vegetation of the northern road corner is a diverse low heath and hummock grasses (site inspection, 2006).</p> <p>A flora survey conducted by RPS Bowman Bishaw Gorham (2005) identified five vegetation associations within the areas applied to clear.</p> <p>Vegetation associations at North White's Beach:</p> <p>C1e - Grassland of <i>Spinifex longifolius</i> over Low Open Shrubland of <i>Threlkeldia diffusa</i> with Low Scattered Shrubs of <i>Rhagodia preissii</i> subsp <i>obovata</i> and <i>Frankenia pauciflora</i> var. <i>pauciflora</i> on ridges and back slopes of white sandy foredunes.</p> <p>C1a - Open Grassland of <i>Spinifex longifolius</i> with Low</p>	<p>The area proposed to clear is a total of up to 1.5 ha, consisting of up to 1.4 ha at North White's Beach and up to 0.05ha (500m²) at each of two nearby road corners.</p> <p>The proposed clearing at North White's beach is for the purpose of conducting a Horizontal Directional Drilling (HDD) pilot study, to assist with constructing a geological model for the underground shoreline crossing of the proposed gas feed pipeline for the Gorgon gas project.</p> <p>The proposed clearing at the two road corners is for the purpose of realigning the road to allow the drill truck to gain access to the North White's Beach HDD site.</p> <p>The area of the proposed clearing (1.5ha) is included in the 300ha of clearing allocated to the Gorgon Project (Chevron, 2006).</p>	<p>Pristine: No obvious signs of disturbance (Keighery 1994)</p>	<p>The Horizontal Directional Drilling (HDD) pilot study is expected to take approximately five weeks to complete, and has been scheduled for July-August to avoid the Green Turtle breeding season which usually commences in October each year. North White's Beach is unsuitable for turtle nesting due to a rocky outcrop along the shoreline, however Green Turtles are known to nest on White's Beach, approximately 500m south of the proposed HDD site. Access to the HDD site will be via an existing road to White's Beach and then along the upper beach slope to North White's Beach.</p> <p>The assessing officer conducted a site inspection of the areas applied to clear on 15th March 2006.</p>

Scattered Shrubs and Herbs of *Atriplex isatidea*, *Myoporum montanum*, *Euphorbia myrtilloides* and *Salsola tragus* on seaward face of white sandy foredunes.

C2h - Low Shrubland of *Acacia coriacea* with *Rhagodia preissii* subsp *obovata* over Very Open Herbland of *Threlkeldia diffusa* over Grassland to Hummock Grassland of *Triodia epactia* and *Spinifex longifolius* on secondary dune slopes and ridges.

Vegetation association at the northern road corner:

C3a - Open Heath of *Acacia bivenosa* over Low Open Shrubland of *Olearia dampieri* subsp *dampieri* with Low Scattered *Myoporum* and *Enchylaena tomentosa* var. *tomentosa* shrubs over Open Hummock Grassland of *Triodia epactia* on red/brown sandy flats behind dunes.

Vegetation association at the southern road corner:

F6i - Closed Hummock Grassland of *Triodia angusta* with patches of *T. epactia* over low scattered *Ptilotus obovatus*, *Adriana urticoides*, *Solanum lasiophyllum* and *Stylobasium spathulatum* on red brown sands near creeklines.

(RPS Bowman Bishaw Gorham, 2005)

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 23,000 ha, it is the second largest island off the Western Australian coast. It is an important refuge for marsupials, subterranean fauna and sea 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, 2006).

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 largest (approx. 1.4ha) of the three areas proposed to clear is located on sparsely vegetated coastal sand dunes and the two smaller areas are located immediately adjacent to an existing road. 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 impact on any flora or fauna of conservation significance or any critical fauna habitats (RPS Bowman Bishaw Gorham, 2005; 2006). 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 concurs with the findings of DoIR's assessment and concludes that it would appear unlikely that this proposal would be seriously at variance to any of the relevant biodiversity principles based on the minor and temporary nature of the proposed vegetation disturbance (CALM, 2006).

Methodology CALM (2002).
CALM (2006).
Chevron (2006).

Conservation Commission (2003).
DEH (2006).
RPS Bowman Bishaw Gorham (2005).
RPS Bowman Bishaw Gorham (2006).

(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 including the rare Barrow Island Black and White Fairy-wren *Malurus leucopterus edouardi*, many reptile species, and internationally significant subterranean fauna. The island is also 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 western beaches of Barrow Island represent the second largest known nesting site for the Green Turtle, a threatened species of marine turtle, protected under the *Wildlife Conservation Act 1950*. North White's Beach (on the north-western side of the island) has been selected by the proponent as the site for the proposed Gorgon feed-gas pipeline to come onto Barrow Island. This section of beach is generally unsuitable for turtle nesting, due to a limestone outcrop approx. 1m high running along the shoreline. The selection of this site for the underground shore crossing of the proposed pipeline received support from the Environmental Protection Authority (EPA, 2003), and the EPA considered that any on-shore work at North White's Beach would have a trivial impact on the Green Turtle (EPA, 2006a). The proposed HDD pilot programme is expected to take approximately five weeks to complete, and has been scheduled for July-August to avoid the Green Turtle breeding season which usually commences in October each year. Green turtles are known to nest on White's Beach, approximately 500m south of the North White's Beach application area, and access to the HDD site will be via the southern end of the beach (Chevron, 2006). The scheduling of this work to avoid the Green Turtle breeding season has been supported by CALM (CALM, 2006).

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. All the fauna habitats found within the application areas are well represented on the island, and the areas proposed to clear represent a very small proportion of the available habitat. No fauna species were expected to be restricted to the application areas. Only fauna that are site restricted, for example species living in burrows, were considered to be at risk from the proposed clearing (RPS Bowman Bishaw Gorham, 2006). The survey concentrated on identifying potentially unique faunal habitats and site-restricted species, in particular Burrowing Bettong warrens, rock holes and restricted or dense vegetation.

Of the several threatened fauna species which are known to occur on Barrow Island, the Burrowing Bettong (Boodie) *Bettongia lesueur ssp.* (R); and the Barrow Island Black and White Fairy-wren, were considered most likely to occur within the areas proposed to clear (RPS Bowman Bishaw Gorham, 2006). The proposed clearing areas and surrounding areas were specifically searched for Burrowing Bettong warrens, and for the Black and White Fairy-wren. No suitable habitat was found for the Black and White Fairy-wren, and no Burrowing Bettong warrens were located within 50m of the areas proposed to clear. The fauna assemblages observed in the survey areas were typical for Barrow Island. The survey concluded that there were no critical fauna habitats within the clearing application areas, and that the habitats which would be disturbed by the proposed clearing were expected to recover rapidly (RPS Bowman Bishaw Gorham, 2006).

Subterranean fauna are considered unlikely to be impacted by the proposed vegetation clearing (RPS Bowman Bishaw Gorham, 2006).

Any potential impacts from the drilling activities of the proposed HDD pilot study fall outside the scope of the clearing permit process and will be addressed by the proponent in their Environmental Management Plan (EMP) for the HDD project, which must be approved by DoIR, prior to commencement of the HDD pilot study.

The proposed vegetation clearing is unlikely to have any significant impact on fauna habitat on Barrow Island.

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

(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 14 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 June, November and December 2005 (RPS Bowman Bishaw Gorham, 2005). The survey recorded three vegetation types at the North White's Beach application area, and a further two vegetation types at the road corner sites. A total of 43 native flora species were recorded within the three areas proposed to clear, and no weed species were recorded (RPS Bowman Bishaw Gorham, 2005).

All five vegetation types are well represented on the island outside the application areas, and none of the vegetation types contain any flora species with restricted distributions. No flora species or communities of conservation significance were recorded within the application areas (RPS Bowman Bishaw Gorham, 2005).

A restricted vegetation community was recorded approximately 100m southeast of the northern road corner. This vegetation association (L3c: Scattered Low Shrubs of *Diplopeltis eriocarpa* with scattered *Triodia epactia*, *Cymbopogon ambiguus* and *Cyperus cunninghamii* subsp. *cunninghamii*, herbs and grasses on small exposed limestone flats), occurs on an area of surface limestone and has not been recorded elsewhere on the island. A seasonal watercourse approximately 50m south of the southern road corner supports a restricted halophyte community (RPS Bowman Bishaw Gorham, 2005). Under the conditions imposed on this clearing permit, the proponent is not permitted to clear these two restricted vegetation associations. Although these vegetation communities occur outside of the areas proposed to clear, the proponent has advised that these two vegetation communities will be roped off during the proposed works, to prevent inadvertent access or damage to the restricted vegetation associations (Chevron, 2006).

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). Neither of these species was recorded within the areas applied to clear (RPS Bowman Bishaw Gorham, 2005).

The proposed clearing is unlikely to impact on any species of Declared Rare or Priority flora.

Methodology CALM (2002).
Chevron (2006).
Conservation Commission (2003).
RPS Bowman Bishaw Gorham (2005).

(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. Barrow Island is located within the Shire of Ashburton (Islands) (GIS Database). Shepherd et al. (2001) report that approximately 100% of the pre-European vegetation still exists in the IBRA Carnarvon Bioregion, however no specific information is available for the Shire of Ashburton (Islands). The vegetation in the application area 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 1.5 ha of vegetation which represents an additional approximately 0.006% 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.
- Local Government Authorities - DLI 8/07/04.
- 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), and there are no watercourses or waterbodies within the areas applied to clear (GIS Database; site visit, 2006).

There is a minor seasonal watercourse located approximately 50m south of the area applied to clear at the southern road corner, however the small area of clearing for the realignment of the road corner is not expected to have any impact on this watercourse.

The proposed clearing of a total of approximately 1.5 ha is unlikely to have any significant impact on any watercourse or wetland.

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 application areas at the road corners are located on relatively flat ground, and the small area of the proposed clearing is unlikely to result in significant erosion or any increased risk of salinity.

The highly permeable sandy soils at North White's Beach reduce the likelihood of erosion due to surface water runoff. The removal of vegetation from the sand dunes at North White's Beach may however result in increased wind erosion of the dunes (RPS Bowman Bishaw Gorham, 2005). At the completion of the HDD project, the proponent will be required to rehabilitate the disturbed sites to control erosion. The conditions imposed on this

clearing permit describe some of the rehabilitation measures required. Further rehabilitation requirements, (for example; recontouring of the dunes) fall outside the scope of the clearing permit process and will be addressed by the proponent in their Environmental Management Plan (EMP) for the HDD project, which must be approved by DoIR, prior to commencement of the HDD pilot study.

Under the conditions 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 HDD project, which must be approved by DoIR, prior to commencement of the HDD pilot study.

Considering the small area and temporary nature of the proposed clearing, it is unlikely to cause appreciable land degradation.

Methodology RPS Bowman Bishaw Gorham (2005).

(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 Marine Park adjoins the Barrow Island coastline approximately 7 km to the south of the North White's Beach application area. The offshore conservation areas will not be impacted by the proposed clearing.

The Barrow Island Nature Reserve covers approximately 23,500 ha (Chevron, 2006). Flora and fauna surveys of the application areas have not identified any unique or significant environmental values within the application areas (RPS Bowman Bishaw Gorham, 2005, 2006). Although the proposal is at variance to this principle, the small area of proposed clearing (1.5ha) represents a very small percentage of the total area of the Nature Reserve, and is unlikely to have any significant impact on the environmental values of this or any other reserve.

CALM concurs with the findings of DoIR's assessment and concludes that it would appear unlikely that this proposal would be seriously at variance to this principle, based on the minor and temporary nature of the proposed vegetation disturbance (CALM, 2006).

Methodology CALM (2006).
Chevron (2006).
Conservation Commission (2003).
DEH (2006).
RPS Bowman Bishaw Gorham (2005).
RPS Bowman Bishaw Gorham (2006).

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

The area applied to clear at North White's Beach consists predominantly of sparse hummock grassland on coastal sand dunes (RPS Bowman Bishaw Gorham, 2005). Due to the minimal vegetation to be cleared and the highly permeable sands, the proposed clearing is unlikely to result in significantly increased surface water run-off.

The southern road corner is approximately 50m away from a minor seasonal creekline, however the small area of clearing on relatively flat ground is unlikely to have any significant impact on the surface water flows into this creekline.

The proposed clearing of three small areas of hummock grassland and low heath is unlikely to have any impact on groundwater.

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

Methodology RPS Bowman Bishaw Gorham (2005).

(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). However the largest section of the application area is located on coastal sand-dunes, and the highly permeable sandy soils reduce the potential for local flooding. The two smaller application areas are for the realignment of road corners. There is a seasonal creekline located approximately 50m south of the southern road corner (GIS Database; site visit, 2006), however the proposed clearing is not likely to impact on 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 area proposed to clear for the southern road corner realignment is on the northern boundary of 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 horizontal directional drilling (HDD) pilot programme is preliminary work associated with the Gorgon Gas development project, which has been 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 this recommendation is currently subject to an appeals period. However the EPA considers the work associated with the proposed HDD 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.
- 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	1.5	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 application area (1.5ha) and the minor and temporary nature of the proposed vegetation clearing, 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 conditions:</p> <ol style="list-style-type: none"> 1. The Permit Holder shall, prior to the commencement of any clearing in accordance with this Permit, clearly mark the areas approved to clear. 2. 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 1124/1). 3. The Permit Holder shall not clear the restricted halophytic community located in the seasonal watercourse adjacent to the Southern road corner, as identified in RPS Bowman Bishaw Gorham (2005) North White's Beach HDD Area Flora and Vegetation Surveys for the Gorgon Project on Barrow Island. 4. The Permit Holder shall not clear the restricted vegetation community L3c located adjacent to the Northern road corner, as identified in RPS Bowman Bishaw Gorham (2005) North White's Beach HDD Area Flora and Vegetation Surveys for the Gorgon Project on Barrow Island. 5. The Permit Holder shall retain all vegetative material and topsoil removed by clearing in accordance with this Permit at North White's Beach (marked on Plan 1124/1). Immediately following completion of the on-site works of the HDD pilot study at North White's Beach, the permit holder shall re-spread the topsoil and vegetative material over the cleared areas. 6. The Permit Holder shall retain all vegetative material and topsoil removed by clearing in accordance with this Permit at the two road corners (marked on Plan 1124/1). Within six months of the completion of the on-site works of the HDD pilot study, the Permit holder shall, either: <ol style="list-style-type: none"> a) re-spread the topsoil and vegetative material over the cleared areas, or b) deep rip the original road alignment at each of the two road corners and re-spread the topsoil and vegetative material over the ripped area; such that only one vehicle route remains at each of the two road corners cleared in accordance with this Permit.

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) Horizontal Directional Drill 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 (2003) Consideration of Access to Barrow Island for Gas Development. Advice to the Government's Environmental, Social, Economic and Strategic Deliberations. Environmental Protection Authority, 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) Gorgon Project Investigative Works. A letter from EPA to Chevron Australia Pty Ltd. Environmental Protection Authority, Western Australia.
- Freighery, 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 (2005) North White's Beach HDD Area Flora and Vegetation Surveys for the Gorgon Project on Barrow Island. RPS Bowman Bishaw Gorham Environmental Management Consultants, Western Australia.
- RPS Bowman Bishaw Gorham (2006) Gorgon Project on Barrow Island Technical Report on Fauna Assessment of North White's Beach HDD and Pipeline Route. 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.

