



1. Application details

1.1. Permit application details

Permit application No.: 1798/1
 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
 Colloquial name: Wells S88 and T81

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
2.1		Mechanical Removal	Petroleum Production

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>The vegetation 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 located in approximately the middle of the island, within the area mapped as Beard Vegetation Association 667.</p> <p>Vegetation surveys conducted by Astron Environmental Services (Astron) in March 2007 identified three main vegetation associations within the area applied to clear:</p> <ol style="list-style-type: none"> Scattered to open low woodland of <i>Ficus brachypoda</i> over hummock grassland of <i>Triodia wiseana</i> on hill slopes and ridges. This vegetation association was recorded at the proposed 'S88' wellsite, and along the majority of the pipeline route. Open to low shrubland of <i>Petalostylis labicheoides</i> over hummock grassland of <i>Triodia wiseana</i> on valley slopes. This vegetation association was recorded at the proposed 'T81' wellsite, and 	<p>Chevron Australia Pty Ltd (Chevron) has applied to clear up to a total of 2.1 ha, within an application area of approximately 52 ha, for the installation of two new production wells within the existing oilfield on Barrow Island.</p> <p>The proposed clearing is for two drill pads, and associated pipelines and access roads for the proposed 'S88' and 'T81' wellsites.</p> <p>The two wellsites are to be located at the western end of the application area. Each drill pad will require approximately 0.46 ha (approximately 60m x 76m) of vegetation disturbance during the initial development drilling phase, in order to safely accommodate the necessary people and equipment. When the wells have commenced production, the size of the drill pads can be reduced to approximately 40% of their original size (Chevron, 2007b).</p> <p>Access to the two drilling sites will be via new access roads (totalling approximately 600m in length) connecting to an existing road to the south of the wellsites (Chevron, 2007a). The two new wellsites will share the same access road for the first 150m. The road will then branch into two, with one branch heading in a north-westerly direction for approximately 200m to wellsite S88 and the other branch heading in a north-easterly direction for approximately 250m to wellsite T81. Access roads will be a maximum of 6m in width, to allow for the safe movement of the drilling rig, vehicles and equipment (Chevron, 2007a).</p> <p>The new wells will be tied into the existing oilfield infrastructure by the installation of above-ground water and oil pipelines (Chevron, 2007a). The new pipelines are expected to total approximately 4.7 km in length, and will follow existing pipeline routes wherever possible. New pipelines will run the length of the application area, connecting the two new wellsites at the western end of the</p>	<p>Pristine: No obvious signs of disturbance (Keighery 1994)</p>	<p>The Barrow Island oilfield has been producing oil since 1967. There are currently more than 400 production wells on Barrow Island. The S88 and T81 wells are located on the northern boundary of the existing oilfield (Chevron, 2007).</p> <p>The drilling programme will utilise water-based drilling muds (Chevron, 2007). Environmental management of the drilling programme will be conducted in accordance with the Chevron Vegetation Management Plan for Barrow Island.</p> <p>Barrow Island is an A Class Nature Reserve, managed for the purposes of conservation by the Department of Environment and Conservation (DEC). Chevron operations on Barrow Island are conducted in consultation with the DEC.</p> <p>Please note: This project is not related to the Gorgon gas development proposed for Barrow Island.</p>

along parts of the access road and pipeline routes.

3. Hummock grassland of *Triodia wiseana* with scattered to open *Ficus brachypoda* with *Pittosporum phyllireoides*. This vegetation association was recorded along parts of the access road and pipeline routes.

application area to an existing separator station at the eastern end of the application area. The new pipelines will be laid by hand or by four wheel drive vehicle, and the vegetation along the pipeline routes will be damaged by the movement of people and vehicles. Some localised slashing of vegetation may be required, to minimise fire risk (Chevron, 2007a). In addition, where pipelines cross existing roads, areas not exceeding 10m x 10m will be excavated immediately adjacent to each side of the road crossing, to facilitate the burial of the pipeline under the road (Chevron, 2007a).

Vegetation disturbance will be minimised, and previously disturbed areas will be used wherever possible (Chevron, 2007a).

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 from previous petroleum exploration activities, and by 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, 2007b).

Despite the existing 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 Windalia Infill Drilling Programme (Chevron, 2007b).

To date, approximately 5.2 % of the vegetation on Barrow Island has been disturbed for the development and operation of existing oilfield activities (Chevron, 2007b). 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 clearing will occur on the northern boundary of the existing oilfield area on the southern half of the island. A vegetation survey conducted over the area applied to clear, reported that the vegetation types and fauna habitats found within the application area are all well represented on the island (Astron, 2007). The survey report 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 (Astron, 2007).

An Environmental Management Plan (EMP) has been developed in consultation with DEC, and must be approved by DoIR prior to the commencement of the drilling programme.

Although the proposed clearing is at variance to this principle, it is considered that the potential impacts of the proposed clearing on the biodiversity values of Barrow Island can be effectively managed and minimised under the above process.

Methodology

Astron (2007).
CALM (2002).
Chevron (2007b).
Conservation Commission (2003).
DEH (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). 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*, 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, 2007a). The proposed clearing is located in the middle of the island, and the small area 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* (R) and the Flatback Turtle, *Natator depressus* (R) (CALM, 2002). The proposed clearing is located in the middle of the island, 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.

Subterranean fauna are considered unlikely to be impacted by the proposed vegetation clearing, however they may be impacted by the actual drilling activities proposed.

Any potential impacts from the drilling activities fall outside the scope of the clearing permit process and will be addressed by the proponent in their Environmental Management Plan (EMP) for the drilling programme, which has been developed in consultation with the DEC, and must be approved by DoIR, prior to commencement of the drilling programme.

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.

Astron Environmental Services (Astron) conducted an environmental assessment of the application area and surrounding areas in March 2007. No fauna of conservation significance or restricted habitat features were recorded either within or in close proximity to the application area (Astron, 2007). Several specimens of the small tree *Ficus brachypoda*, an important fauna habitat species, were recorded within the application area, at the proposed wellsite S88 and scattered along the proposed access road and pipeline routes (Astron, 2007). Clearing of this species will be avoided wherever possible (Chevron, 2007a). The road and pipeline routes have been adjusted slightly to avoid the majority of these trees, however a few individuals are likely to be cleared at wellsite S88 (Astron, 2007; Chevron 2007a). Astron (2007) report that *F. brachypoda* extend along the ridgeline in both directions from the S88 wellsite, and that the area proposed to clear represents a very small proportion of the available habitat. Astron (2007) concluded that all the fauna habitats found within the application areas were well represented on the island, and that no fauna species were expected to be restricted to the application areas (Astron, 2007).

It is considered that the potential impacts on fauna habitats can be adequately managed through the conditions imposed on the clearing permit and the management measures outlined in the EMP, and that the proposed clearing is unlikely to have any significant impact on the fauna habitats of the island.

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

Methodology

Astron (2007).
CALM (2002).
Chevron (2007a).
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

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 (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, 2007a). There are no known populations of Declared Rare Flora on Barrow Island (Chevron, 2007a; GIS Database). Two species of Priority flora occur on the island: *Corchorus congener* (P3), and *Helichrysum oligochaetum* (P1) (Chevron, 2007a; GIS Database).

Corchorus congener is a small shrub, widespread over the island, and likely to be found in and around the application area (Chevron, 2007a). Two plants of this species were recorded within the application area, at the proposed S88 wellsite (Astron, 2007). This species is known to regenerate well following disturbance, and the removal of two plants is not considered to be a threat to the population of *C. congener* on Barrow Island (Astron, 2007).

Helichrysum oligochaetum is more restricted, and is less likely to be found in close proximity to any of the proposed disturbance areas (Chevron, 2007b). No plants of this species were found during the vegetation survey (Astron, 2007).

Under the conditions imposed on this clearing permit, the proponent is not permitted to clear any specimens of *H. oligochaetum* (P1). Populations of *C. congener* (P3), and restricted vegetation associations will be avoided where practicable.

Chevron have developed a Vegetation Management Plan and an Environmental Sensitivity Mapping Database for Barrow Island, which identifies vegetation associations that are considered to be of particular conservation significance due to their unique species composition or restricted distribution (Chevron, 2007b).

A vegetation survey of the application area identified three main vegetation associations, all of which are widespread on the island (Astron, 2007). The application area is located on exposed stony slopes and the vegetation is relatively species poor, with only 12 flora species being recorded during the survey (Astron, 2007). Astron (2007) concluded that the proposed clearing would not result in a detrimental impact on any vegetation type of either high conservation significance or restricted distribution on Barrow Island.

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

Methodology Astron (2007).
CALM (2002).
Chevron (2007a).
Chevron (2007b).
Conservation Commission (2003).
GIS Database:
- Declared Rare and Priority Flora List - CALM 01/07/05.

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

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

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 - 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 99.8% of the pre-European vegetation still exists in the IBRA Carnarvon Bioregion. 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 89.7% of this vegetation type remaining, with approximately 99.7% in reserves.

Barrow Island covers an area of approximately 23,500 ha. To date, approximately 5.2% of the vegetation on Barrow Island has been disturbed for the development and operation of existing oilfield activities (Chevron, 2007a). The proposed clearing will disturb a further 2.1 ha of vegetation which represents a very small percentage of the remaining vegetation of the island.

Based on the above, the proposed 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)	8,382,975*	8,369,554*	99.8%	Least concern	
	No information available				
Beard vegetation association - 667	22,862	20,500	~89.7%	Least concern	99.7%

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002)

Methodology

CALM (2002).
 Chevron (2007a).
 Dept of Natural Resources and Environment (2002).
 Shepherd et al. (2001).
 GIS Database:
 - Interim Biogeographic Regionalisation of Australia - EA 18/10/00.
 - Local Government Authorities - DLI 8/07/04.
 - Pre-European Vegetation - DA 01/01.

(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, 2007a; GIS Database).

There are two minor seasonal watercourses (shallow drainage lines) crossing the proposed pipeline corridor (Astron, 2007; GIS Database). These drainage lines are dry for most of the year, only flowing briefly following significant rainfall events (Chevron, 2007a). The minor nature of the vegetation disturbance required for laying pipelines across these drainage lines is unlikely to have any significant impact on these watercourses.

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

Methodology

Astron (2007).
 Chevron (2007a).
 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 majority of the application area occurs on gently sloping stony hill slopes, with a stony mantle over red skeletal red silts (Astron, 2007).

The small areas of the proposed clearing for two wellsites, and the linear clearing for access roads and pipelines are unlikely to cause appreciable land degradation. Under the conditions imposed on this clearing permit, the proponent is required to implement appropriate measures to minimise erosion within the application area and surrounding areas.

Drilling operations will use water based fluids, and all drill cuttings will be discharged into a pit (Chevron, 2007b).

No weed species were recorded within the areas proposed to clear (Astron, 2007). 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 and erosion control measures will be described by the proponent in their Environmental Management Plan (EMP) for the drilling programme, which must be approved by DoIR, prior to commencement of the drilling programme.

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

Methodology Astron (2007).
Chevron (2007b).

(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 (GIS Database). 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, 2006; 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 in the middle of the island.

The Barrow Island Nature Reserve covers approximately 23,500 ha (Chevron, 2007a). Although the proposal is at variance to this principle, the area of proposed clearing (2.1 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.

Methodology Chevron (2007a).
Conservation Commission (2003).
DEH (2006).
GIS Database:
- CALM Managed Lands and Waters - CALM 1/07/05.
- Register of National Estate - EA 28/01/03.

(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 subtropical climate, with an average annual rainfall of 320mm (Chevron, 2007b). Rainfall is highly variable and frequently associated with cyclones, which occur between November and March (Chevron, 2007b).

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 groundwater level over most of the island is close to sea level (Chevron, 2007b). 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, 2007b). The proposed clearing of small areas spread over a very large application area, is unlikely to have any impact on groundwater levels or quality.

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

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

Methodology Chevron (2007b).
GIS Database:
- Hydrography, Linear - DoE 1/2/04.

(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 is one minor, seasonal creekline located within the application area (GIS Database), however this creekline only flows temporarily following significant rainfall events.

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).
GIS Database:
- Hydrography, Linear - DoE 1/2/04.

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 the clearing permit application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

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.

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.

Methodology 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
Petroleum Production	Mechanical Removal	2.1	Grant	<p>The proposal has been assessed against the Clearing Principles, and is at variance to the following Principles:</p> <ul style="list-style-type: none"> (a) biological diversity; (h) conservation areas. <p>The proponent has developed a Vegetation Management Plan and an Environmental Sensitivity Mapping Database for Barrow Island to assist with the management of environmental impacts on the island. In addition, the proponent has compiled an Environmental Management Plan for the proposed drilling programme. This management plan has been developed in consultation with the Department of Environment and Conservation (DEC) and the Department of Industry and Resources (DoIR).</p> <p>The assessing officer concludes that the potential environmental impacts of the proposed clearing can be adequately managed through the above processes, and therefore recommends that the permit be granted, subject to the following conditions:</p> <ol style="list-style-type: none"> 1. The Permit Holder shall record the following for each instance of clearing: <ul style="list-style-type: none"> (a) the location where the clearing occurred, expressed as grid coordinates using the Geocentric Datum of Australia 1994 coordinate system; (b) the size of the area cleared in hectares or square metres; (c) the method of clearing; (d) the purpose of clearing; (e) the area rehabilitated in hectares or square metres; (f) the dates on which the area was cleared. 2. The Permit Holder shall provide a report to the Director, Environment, Department of Industry and Resources (DoIR) by 30 September 2008, setting out the records required under Condition 1 of this Permit in relation to clearing carried out in accordance with this Permit. 3. The Permit Holder shall record the information collected under Condition 1 of this permit in the Environmental Sensitivity Mapping Database on the Chevron Barrow Island Geographic Information System by 30 September 2008, in relation to clearing carried out in accordance with this Permit. 4. When undertaking any vegetation clearing in accordance with this Permit, the Permit Holder shall, where practicable, utilise existing cleared or previously disturbed areas of vegetation in preference to undisturbed areas of vegetation. 5. When undertaking any vegetation clearing for laying of pipelines in accordance with this Permit, the Permit Holder shall only use the following methods: <ul style="list-style-type: none"> (a) walking over vegetation; (b) driving an off-road vehicle or equipment over vegetation; (c) cutting vegetation using appropriate equipment in areas of high and thick Spinifex where access on foot is not practicable; (d) laying of pipelines on the surface of vegetation. (e) where a pipeline crosses a road, excavating a maximum area of 10m x 10m immediately adjacent to each side of the road crossing, to facilitate the burial of the pipeline under the road. 6. The Permit Holder shall not clear the Priority 1 flora species <i>Helichrysum oligochaetum</i>. 7. The Permit Holder shall not clear areas designated by an Environmental Specialist, or designated on the Environmental Sensitivity Mapping Database of the Chevron Barrow Island Geographic Information System, as having an environmental sensitivity classification of Priority 1 (as defined in this Permit), unless such clearing has been approved in writing by the Director, Environment, Department of Industry and Resources. 8. The Permit Holder shall where practicable avoid accessing by vehicle those areas designated by an Environmental Specialist, or designated on the Environmental Sensitivity Mapping Database of the Chevron Barrow Island Geographic Information System, as having an environmental sensitivity classification of Priority 2 (as defined in this Permit).

9. Prior to commencement of vegetation clearing, all proposed clearing areas shall be surveyed by an Environmental Specialist or qualified botanist. The Environmental Specialist or botanist shall assess the results of surveys and ensure that, to the extent practicable, any proposed clearing areas:

(a) incorporate previously disturbed areas;

(b) will be located so as to minimise the amount and impacts of clearing within the permitted area, in accordance with the requirements of the '*ASBU Barrow Island Vegetation Management Plan Version 2.0, 26 July 2006*', (or later revision of this document);

(c) will not impact on Priority Flora;

(d) will not impact on areas designated by an Environmental Specialist, or designated on the Environmental Sensitivity Mapping Database of the Chevron Barrow Island Geographic Information System, as having an environmental sensitivity classification of Priority 2 (as defined in this Permit).

10. The Permit Holder shall, where practicable, avoid removal of or disturbance to any termite mounds.

11. The Permit Holder shall implement appropriate erosion control measures to minimise potential erosion or ecological damage within the areas cleared and adjacent areas.

12. The Permit Holder shall implement appropriate weed control measures to prevent the establishment of weeds within the areas cleared and adjacent areas.

13. The permit holder shall implement the DoIR approved '*Environmental Management Plan. Barrow Island Infill Drilling Program, April 2007*' (or later revision of this document).

5. References

- Astron (2007) Proposed Infill Drilling Program Operations S88 and T81 Barrow Island Environmental Assessment, March 2007. Compiled by Astron Environmental Services for RPS Bowman Bishaw Gorham, Western Australia.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- Chevron (2007a) Barrow Island Infill Drilling Program Purpose Permit Application Supporting Documentation. Chevron Australia Pty Ltd, Western Australia.
- Chevron (2007b) Environmental Management Plan. Barrow Island Infill Drilling Program. 18 April 2007. Compiled by RPS Bowman Bishaw Gorham for 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.
- 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:

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

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005. Department of Conservation and Land Management, Como, Western Australia*} :-

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2** **Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4** **Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5** **Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)

- EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN** **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU** **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.