



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 1112/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Chevron Australia Pty Ltd

1.3. Property details

Property: Production Licence L 1H R1
Colloquial name: South Perentie Pipeline Installation

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.25		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). Most of the island (95%) is mapped as Beard Vegetation Association 667: Hummock grasslands; shrub steppe; scattered shrubs over <i>Triodia wiseana</i> and <i>T. sp. indet. aff. angusta</i> (now <i>T. angusta</i>) (GIS Database, Shepherd et al. 2001). Beard Vegetation Association 117 occurs at the southern end of the island and is described as Hummock grasslands, grass steppe; soft spinifex (<i>Triodia pungens</i> now <i>T. epactia</i>). The proposed clearing areas are located in the southwest of the island and include both Beard Vegetation Associations 117 and 667.</p> <p>At a finer scale, Matiske and Associates (1993) further mapped and described 34 vegetation types for Barrow Island. Seven of these are mapped as occurring within the western alignment option of the proposed clearing area (D2, F1, F5, F6, L9, V1, V2) and eight within the northern alignment option (as above plus L7). These are:</p> <p>D2 - Hummock grassland of <i>Triodia angusta</i> along minor creeklines and drainage lines; F1 - Hummock grassland of <i>Triodia angusta</i> on red earth flats and drainage lines; F5 - Mixed hummock grassland of <i>Triodia pungens</i> (now <i>T. epactia</i>) – <i>T. angusta</i> on fringes of main red earth flats and drainage lines; F6 - Hummock grassland of <i>Triodia pungens</i> (now <i>T. epactia</i>) on slopes of escarpments on fringes of red earth flats; L7 - Hummock grassland of <i>Triodia wiseana</i> with pockets of <i>Melaleuca cardiophylla</i> on limestone ridges; L9 - Hummock grassland of <i>Triodia wiseana</i>, <i>Triodia angusta</i> with emergent <i>Sarcostemma viminalis</i> subsp. <i>Australe</i> and <i>Ficus platypoda</i> (now <i>Ficus brachypoda</i>) on coastal limestone flats and low ridges with localised pockets of <i>Frankenia pauciflora</i>; V1 - Hummock grassland of <i>Triodia wiseana</i> with mixed emergent shrub species on valley slopes; and V2 - Hummock grassland of <i>Triodia wiseana</i> with <i>Pentalepis trichodesmoides</i> on southern escarpment.</p> <p>Chevron engaged Astron (2005a, 2005b) to conduct further vegetation and flora surveys of the proposed clearing area between 29 August and 3 September 2005, and from 7 to 9 December 2005, and to identify, assess and minimise the impacts of proposed pipeline routes, including determining the most environmentally sensitive route. Astron (2005a) described around 24 detailed vegetation types or sub-units of the broader formations classified by Matiske.</p>	<p>The South Perentie exploration and appraisal well (approved under a different permit) is to be drilled in the southeast part of Barrow Island. In the event that the well encounters hydrocarbons, a pipeline will also be required to connect the well to existing oilfield production facilities. The clearing proposed under this application is for this pipeline installation.</p> <p>The proposed clearing comprises up to 1.25 ha within an area of approximately 720 ha. Two options for the route of this pipeline have been identified and are undergoing feasibility review in regards to engineering and construction. The western alignment option is 4.8 km long by 900 mm wide and the northern alignment option is 5.35 km long by 900 mm wide. While this assessment includes both options, only one of the two will be implemented. Any minor deviations to these proposed alignments will be surveyed prior to clearing (RPS Bowman, Bishop and Gorham 2006).</p>	<p>Good: structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994).</p> <p>To</p> <p>Pristine: No obvious signs of disturbance (Keighery 1994).</p>	<p>Most of the proposed clearing areas comprise red earth coastal flats, with low red hill slopes towards the western portion of the western alignment option and undulating hill slopes becoming more pronounced towards the northern portion of the northern alignment option.</p> <p>The majority of the land along the pipeline routes has been previously disturbed (76% of the western alignment option and 70% of the northern alignment option), with most of the southern section following the route of a former seismic line.</p> <p>Most of the proposed clearing will involve vegetation being driven-over during vehicle access to install the pipeline. However, in more isolated areas where Spinifex hummocks are particularly dense and tall, some localised cutting of vegetation may be required. Any cut vegetative material will be removed from the site to minimise potential impacts from shading. The pipe will be installed by hand directly on the ground surface from a trailer towed by a 4WD vehicle. In areas designated as of high sensitivity, pipe will be laid without vehicle access.</p>

3. Assessment of application against Clearing Principles

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

Comments

Proposal is at variance to this principle

Barrow Island is an A Class Nature Reserve that is recognised internationally for its extremely high biodiversity conservation values. It is best known for its abundant mammals and is recognised as an important refuge for numerous native mammal species that have either declined in numbers or become extinct on the mainland. The island's beaches and near-shore environment are also an important breeding ground for three threatened species of turtle. Barrow Island also has a rich bird and reptile fauna, a unique and valuable assemblage of subterranean animals, and valuable vegetation communities (Conservation Commission of Western Australia 2003).

With an area of about 23 000 ha, Barrow Island is the second largest island off the Western Australian coast and one of the largest land masses in the world that has no introduced animals. Consequently, its vegetation has not been impacted by grazing by introduced stock or feral animals, and introduced predators have not affected its animal assemblages.

The vegetation of Barrow Island is atypical of the islands on the North-West Shelf (Conservation Commission of Western Australia 2003). The flora of Barrow Island is regionally significant because there are species or taxa that: appear to be restricted to the island; represent the southern limit of plants of the Kimberley Region; represent the western limit of plants of the Pilbara Region; and represent the northern limit of the plants of the Cape Range IBRA Region (Chevron 2005c).

Barrow Island is also the site of a large on-shore oil field with petroleum production established in the 1960's. There are more than 400 operational oil wells on the island and it is traversed by numerous seismic lines and pipelines, with storage tanks located on the eastern side. Approximately 1050 ha or 4.46% of Barrow Island has previously been cleared for the development of infrastructure for existing oilfield operations. An additional 172 ha (0.72%) has been disturbed for seismic operations and installation of flow lines, bringing the total to 5.18% (Chevron 2005b).

The proposed clearing area is linear and small at up to 1.25 ha (less than 0.006% of Barrow Island's total area), and most of the proposed clearing will involve vegetation being driven-over during vehicle access for pipeline installation, rather than the complete removal of plants. In addition, the majority of the vegetation along the pipeline routes has been previously disturbed (76% of the western alignment option and 70% of the northern alignment option), with most of the southern section following the route of a former seismic line. The proposed pipeline routes have been surveyed and located so as to avoid sensitive features such as Boodie (*Bettongia lesueur*) warrens, termite mounds, and individual or clusters of large trees or shrubs. However, two sections along the proposed pipeline routes are designated as having relatively high environmental value and are classified as Category 2 management areas in the Chevron Vegetation Management Plan (Chevron 2006a). These sections comprise Mattiske Vegetation Types F6 and V2 (which are limited in extent) and occupy a 63 m length on the western alignment option and a 67 m length along the northern alignment option. In these sections, pipe will be laid by hand without vehicle access (RPS Bowman, Bishop and Gorham 2006). Conditions have been placed on the permit to ensure that if any deviations are made to the proposed pipeline routes, further surveys will be conducted, maximum use will be made of previously disturbed areas, environmentally sensitive features will be avoided, and the impacts of clearing will be minimised in accordance with the Chevron Vegetation Management Plan (Chevron 2006a).

While the impacts of this particular proposal to clear are likely to be low, the Conservation Commission of Western Australia (2003) considers that the area of the island that is already affected by clearing is significant. The Commission has stated that in the long term, an inevitable series of cumulative impacts of proposed developments will substantially diminish the biodiversity conservation values of Barrow Island Nature Reserve and the marine ecosystems offshore. Therefore, the impacts of any additional clearing needs to be seen in this cumulative context and is considered to be at variance with this principle.

Methodology Conservation Commission of Western Australia 2003.
Chevron 2005b
Chevron 2005c
Chevron 2006a
RPS Bowman, Bishop and Gorham 2006

Officer

(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 is recognised as an important refuge for native mammal species that have either declined in numbers or become extinct on the mainland. Six are listed as threatened under the *Wildlife Conservation Act 1950*. Three threatened species of marine turtle breed on Barrow Island's beaches and the Green and Flatback rookeries are considered large and significant. Thirty-two of the 110 bird species recorded on the island are known to breed there. The Barrow Island Black-and-White Fairy-wren *Malurus leucopterus edouardi* occurs

nowhere else and is also listed under the Act as a threatened species. The rich subterranean fauna comprising stygofauna and troglifauna includes a further twelve species listed as threatened (Conservation Commission of Western Australia 2003). Significant reptile species include a blind snake *Ramphotyphlops longissimus* which is priority listed by DEC (P2), and the Leopard Skink *Ctenotus pantherinus* subsp. *Acripes*, both of which occur nowhere else. Two other priority listed fauna species include the Water Rat *Hydromys chrysogaster* (P4) and the Eastern Curlew *Numenius madagascariensis* (P4). Along with the Water Rat and the Leopard Skink, other non-listed significant fauna described by Chevron (2005b) as “key receptors (evolutionary significant units)” include: the land snail *Rhagada* sp.; the scorpion *Urodacus* sp. nov. ‘Barrow’; the Northern Brushtail Possum *Trichosurus vulpecular arnhemensis*; termites *Nasutitermes triodia*; Mygalomorph spiders; the Spinifex bird *Eremiornis carteri*; and the Perentie *Varanus giganteus*.

Due to their subterranean location, stygofauna are unlikely to be directly affected by the proposed clearing. Similarly, no marine or coastal habitats would be impacted by this proposal. Monitoring has found that, with the exception of the Black-flanked Rock Wallaby *Petrogale lateralis* subsp. *lateralis*, all of the terrestrial fauna on Barrow Island are abundant and in secure populations (Burbidge et al. 2003: cited in Chevron 2005c). However, as the Black-flanked Rock Wallaby is largely confined to limestone outcrops on the west of the island (Chevron 2005b), the species is unlikely to occur within the proposed clearing area. Trapping and spotlighting data from both DEC and monitoring for the Gorgon Development indicate similar densities of most mammals across the island. The reptiles, birds and invertebrates also appear to be widely distributed across the island, or at least within areas of similar habitat (Chevron 2005c). Fauna habitats within the proposed clearing areas are well represented elsewhere on the island.

Environmental surveys were conducted by Astron (2005a, 2005b) in order to identify pipeline alignment options that avoid all features of particular fauna significance, including termite mounds and Boodie (*Bettongia lesueur*) warrens along with individual or clusters of large trees or shrubs (RPS Bowman Bishaw Gorham 2006). One active Bettong warren lies adjacent to each of the proposed pipeline alignment options but the routes have been selected to provide a separation distance of over 50 m from the warrens.

While none of the broad vegetation types mapped by Matisse and Associates (1993) and designated as “significant vegetation communities with restricted distribution or threatened or restricted species” occur within the proposed clearing area, Vegetation Type L7 is classed as an “otherwise significant vegetation community” because it contains *Melaleuca cardiophylla* which is significant for supporting the Barrow Island Black-and-white Fairy-wren. However, finer-scaled surveys by Astron (2005a, 2005b) showed that although broadly mapped across the proposed clearing area, L7 does not actually occur along either of the proposed pipeline routes.

Given that the proposed clearing areas were selected to avoid all features of particular fauna significance, the relatively small area of the proposed clearing (a linear area of 1.25 ha) along predominantly pre-disturbed routes, and the relatively low impact clearing methods (mainly off-road vehicles rolling over vegetation), the proposal is considered not likely to be at variance to this principle.

Methodology Astron 2005a
Astron 2005b
Conservation Commission of Western Australia 2003
Chevron 2005b
Chevron 2005c
Matisse and Associates 1993
RPS Bowman Bishaw Gorham 2006

Officer

(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

No Declared Rare Flora species listed under the *Wildlife Conservation Act 1950*, or protected plant taxa listed under Section 179 of the *Environment Protection and Biodiversity Conservation Act 1999*, have been located during surveys of, or are known to occur on Barrow Island (GIS database, Chevron 2005c, RPS Bowman Bishaw Gorham 2006).

One Priority flora species, as listed by DEC, *Corchorus congener* (Priority 3) occurs on the island (GIS database) and was recorded along a 63 m-long section of the proposed western alignment option. This species is widespread on Barrow Island, has been found in a number of locations in the Pilbara Region, and is known to recover well from disturbance (Western Australian Herbarium 2006, RPS Bowman Bishaw Gorham 2006). In addition, Chevron have committed to laying the pipeline by hand without vehicle access along this section of the proposed western alignment option. This commitment is included as a condition on the permit.

The proposed pipeline alignment was chosen to avoid locally significant flora identified as ‘Species needing special attention’ in Matisse and Associates (1993). One species *Dichanthium sericeum* subsp. *humilis*, which is an annual grass that occurs elsewhere in the Pilbara, was found at some locations along the proposed pipeline route. However, it was also recorded in surrounding areas that would not be impacted by the proposed clearing (Astron 2005a, 2005b).

Therefore, the area of the proposed clearing is not considered necessary for the continued existence of rare flora and is not likely to be at variance to this principle.

Methodology Astron 2005a
Astron 2005a
Chevron 2005c
Western Australian Herbarium 2006
GIS database: Declared rare and priority flora list - CALM 01/07/05
Mattiske and Associates 1993
RPS Bowman Bishaw Gorham 2006

Officer

(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 on Barrow Island (GIS database) and no known threatened ecological communities were identified in surveys conducted over the proposed clearing areas (RPS Bowman Bishaw Gorham 2006). Therefore the proposed clearing is not likely to be at variance to this principle.

Methodology GIS database: Threatened Ecological Communities - CALM 12/04/05
RPS Bowman Bishaw Gorham 2006

Officer

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

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

There are two broad Pre-European Beard Vegetation Associations on Barrow Island and within the proposed onshore clearing area: 117 - Hummock grasslands, grass steppe; soft spinifex (*Triodia pungens* now *T. epactia*); and 667 - Hummock grasslands, shrub-steppe: scattered shrubs over *Triodia wiseana* and *Triodia* sp. indet. aff. *angusta* (now *T. angusta*) (GIS database). Shepherd et al. (2001; data updated 2005) reported that 96.4% and 89.7% of these associations remain intact respectively, with 13.1% and 97.3% in IUCN Class I-IV Reserves. However, Vegetation Association 667 is largely confined to Barrow Island.

	Pre-European area (ha)	Current extent (ha)	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves (and Current%)
IBRA Subregion – Cape Range	2368842	2359041	99.6	Least concern	3.3% (3.1%)
IBRA Region - Carnarvon	8382974	8369554	99.8	Least concern	3.6% (3.6%)
Shire of Ashburton (Islands)	No information available				
Beard vegetation associations					
117	919751	886791	96.4%	Least concern	13.2% (13.1%)
667	22861	20500	89.7%	Least concern	97.3% (97.3%)
Extent of Beard veg. associations within IBRA subregion					
117	42764	38667	90.4%	Least concern	21.3% (20.5%)
667	21841	20340	93.1%	Least concern	99.7% (99.9%)

* Shepherd et al. (2001; data updated 2005)

** Department of Natural Resources and Environment (2002)

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)

Presumed extinct Probably no longer present in the bioregion
Endangered* <10% of pre-European extent remains
Vulnerable* 10-30% of pre-European extent exists
Depleted* >30% and up to 50% of pre-European extent exists
Least concern >50% pre-European extent exists and subject to little or no degradation over a majority of this area

* or a combination of depletion, loss of quality, current threats and rarity gives a comparable status

A more detailed survey and mapping by Mattiske and Associates (1993) identified 34 vegetation types across Barrow Island, seven of which occur within the proposed western pipeline alignment option, and eight within the northern pipeline alignment option: D2, F1, F5, F6, L9, V1, V2 and (L7 northern alignment only) (RPS Bowman, Bishop and Gorham 2006). While most of these vegetation types are considered widespread throughout the island (each occupying greater than 1000 ha), F6 and V2 comprise relatively small areas at 137 ha and 145 ha respectively (RPS Bowman, Bishop and Gorham 2006). Currently, approximately 12% and 0.03% of these vegetation types have been cleared respectively. These vegetation types occupy a 63 m length on the western alignment option and a 67 m length along the northern alignment option. Chevron have committed to laying pipe by hand in these sections without vehicle access. Conditions imposed on the permit enforce this commitment.

While the more widespread vegetation types mostly have around 3% or less of their total area cleared to date, D2 has been more extensively cleared at around 22% (Chevron 2006b). However, the clearing proposed under this application represents around: 0.003% (western alignment option) or 0.011% (northern alignment option) of the remaining extent of D2; 0.036% or 0.022% of F6; and 0.024% or 0.032% of V2 respectively (calculated from RPS Bowman Bishaw Gorham 2006).

Currently around 5.2 % or 1223 ha of the vegetation on Barrow Island has been disturbed for the development and operation of existing oilfield activities (Chevron 2005a). The clearing proposed under this application will disturb around 1.25 ha of onshore vegetation which represents less than 0.006% of the total extant vegetation of the Island. Given the small linear area of disturbance and the relatively low impact nature of the proposed method of clearing (vehicles rolling over vegetation, hand cutting of tall vegetation, and laying of pipeline on top of vegetation), the remaining extent of vegetation is considered adequate for the retention and conservation of the island's vegetation communities. Therefore, the proposal is not likely to be at variance to this principle.

Methodology Chevron 2005a
Chevron 2006b
Department of Natural Resources and Environment (2002)
Mattiske and Associates (1993)
GIS Database: Pre-European Vegetation – DA 01/01
RPS Bowman, Bishop and Gorham 2006
Shepherd et al. (2001; data updated 2005)

Officer

(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 at variance to this Principle

Minor non-perennial watercourses occur within the clearing area (GIS database). These are highly ephemeral and are usually dry, running only after significant rainfall events. Vegetation occurring in these drainage lines (Mattiske Vegetation Type D2) is typically dominated by *Triodia angusta*, a colonising species, rather than a riparian species that is specially adapted to the storage or flow of water. Vegetation Type D2 is described as a Hummock Grassland of *Triodia angusta* along minor creeklines and narrow drainage lines (Mattiske and Associates 1993).

The only permanent water sources on Barrow Island occur in freshwater seeps. The two known permanent seeps both occur on the west coast of the island well away from the area of proposed clearing. Other seeps on the island are ephemeral and generally only appear after rain events (Chevron 2005b).

Therefore the proposed clearing is considered not at variance to this Principle.

Methodology Chevron 2005b
GIS Database: Hydrography, linear – DOE 1/2/04
Mattiske and Associates 1993

Officer

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 method of vegetation clearing will involve a vehicle driving over vegetation (the majority of which has been previously disturbed) with some local cutting of particularly tall vegetation, and in more environmentally sensitive areas, hand-laying of pipe on the surface of vegetation. These methods will allow topsoil and protective vegetation cover to remain in place, hence minimising the potential for any accelerated surface water runoff and soil erosion. This commitment has been reinforced through the conditions attached to the permit.

Chevron has committed to the long term rehabilitation of disturbed areas in accordance with Environmental Management Plans and Barrow Island rehabilitation procedures approved by DoIR and DEC (formerly CALM). The Perentie South pipeline will be decommissioned as per all other production infrastructure at the end of the oilfield life. However, active rehabilitation may not be required given the relatively low impact clearing methods. Chevron will also conduct ongoing monitoring of the extent of disturbance to different vegetation types (RPS Bowman Bishaw Gorham 2006).

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

Methodology RPS Bowman Bishaw Gorham 2006
Officer

(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 that has extremely high biodiversity conservation values (Conservation Commission 2003). It is vested in the Conservation Commission of Western Australia and is reserved for the purposes of flora and fauna conservation in order to protect these values. The proposed area of clearing is relatively small at 1.25 ha, the clearing methods are relatively low impact, and much of the proposed clearing will occur on pre-disturbed areas. However, any clearing impacts should be seen in a cumulative context and the proposed clearing is considered to be at variance to this principle.

DEC's Biodiversity Coordination Section provided the following advice: Based on the relatively low impact clearing methods and the small area proposed to be cleared, in general DEC concurs with the findings of DoIR's assessment of this application.

- DEC notes that the proponent will monitor the disturbance and undertake appropriate rehabilitation based on the results of the 2006 Decommissioning and Rehabilitation Monitoring Program.
- DEC notes that surveys were conducted to identify pipeline route options that avoid all features of particular fauna significance and that vegetation type L7 containing *Melaleuca cardiophylla*, which is significant for supporting the Barrow Island Black-and-White Fairy-wren, does not actually occur along either of the proposed pipeline routes.
- DEC notes that no Declared Rare Flora species were located during surveys. The proponent has committed to minimising potential damage to *Corchorus congener* (Priority 3) by laying the pipeline by hand where the species is known to occur along the proposed western alignment option (if this option is chosen) (DEC 2006).

Methodology Conservation Commission 2003
DEC 2006

Officer

(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 at variance to this Principle

Only minor non-perennial watercourses occur within the proposed clearing area (GIS database). These contain water only after cyclonic rain. Given the relatively low impact clearing methods, any potential change in surface water flows or groundwater recharge that could result from the proposed clearing of up to 1.25 ha in this environment is considered negligible and unlikely to cause deterioration in the quality of surface or underground water. Therefore, the proposal is considered not at variance to this principle.

Methodology GIS database: Hydrography, linear – DoE 1/02/04
Officer

(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 at variance to this Principle

While only minor non-perennial watercourses occur within the proposed clearing area, it does included two

areas designated as subject to inundation according to the GIS database. However, these areas are designated by Chevron as Category 1 priority areas in which operation will be avoided (Chevron 2006a). While Barrow Island is not prone to flooding under normal climatic conditions, it is located in a cyclone region and temporary flooding could occur as a result of cyclonic rains. However, natural surface water flows and flooding are unlikely to be altered as a result of the relatively small area of proposed vegetation clearing (up to 1.25 ha), particularly given the relatively low impact method of clearing (vehicles rolling over vegetation) and that much of the designated pipeline routes have been previously disturbed. Therefore the proposal is not likely to be at variance with this principle.

Methodology GIS Database: Hydrography, linear – DoE 1/02/04
Chevron 2006a

Officer

(k) Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

The Environmental Protection Authority Service Unit (EPASU) has advised that the Perentie South Pipeline Installation proposal does not need to be referred to the EPA for assessment because the key environmental issues will be addressed by the vegetation clearing assessment and through discussion with CALM (T. Gentle EPASU 2006, pers. comm., 11 May).

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. In addition, as offshore petroleum exploration is not a prescribed activity, it does not require a license or works approval (DoE 2006).

There are no native title claims registered over Barrow Island and there are no known sites of Aboriginal significance within the proposed clearing area (GIS database). However, two Registered Indigenous Heritage Sites occur within 400 m to the west of the proposed clearing area: Barrow Island 10 (site ID 892), and Barrow Island 02 (site ID 884) (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.

Methodology DoE (2006)
GIS database: Native Title Claims – DLI 7/11/2005.
GIS database: Aboriginal Sites of Significance – DIA 28/02/2003.

Officer

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Petroleum Production	Mechanical Removal	1.25		<p>The assessable criteria have been addressed and the clearing as proposed is at variance with Principles (a) (biodiversity) and (h) (conservation reserve). Barrow Island is an A Class Nature Reserve that is recognised internationally for its extremely high biodiversity conservation values, and which is reserved to protect it against other land uses. While the clearing area is relatively small and the clearing methods are relatively low impact in nature, the impacts of any clearing on Barrow Island need to be seen in a cumulative context. However, the applicant has established a process to assess and minimise the impact of clearing using an environmental sensitivity database developed for Barrow Island and the pipeline alignment routes have been located so as to minimise impacts on significant biodiversity, fauna and flora values. Therefore the assessing officer recommends that the permit be granted subject to the following conditions:</p> <ol style="list-style-type: none"> The Permit Holder shall record the following for each instance of clearing: <ol style="list-style-type: none"> The location where clearing occurred, expressed as grid coordinates using the Geocentric Datum of Australia 1994 coordinate system; The area cleared in hectares; The method of clearing; and The purpose of clearing. The Permit Holder shall provide a report to the Director, Environment, DoIR, by 30 September 2007 setting out the records required under condition 1 of this permit in relation to clearing carried out between 23 September 2006 and 23 January 2007. The Permit Holder shall record the information collected under Condition 1

of this permit in the Chevron Barrow Island Geographic Information System Environmental Sensitivity Mapping Database by 30 June 2007.

4. When undertaking any clearing pursuant to this Permit, the Permit Holder shall utilise existing cleared or previously disturbed areas of vegetation in preference to undisturbed areas of vegetation within the area cross-hatched in yellow on the attached Plan 1112/1.
5. When undertaking any vegetation clearing pursuant to this Permit, the Permit Holder shall only use the following methods: (i) driving an off-road vehicle over vegetation; (ii) cutting of tall vegetation where required; (iii) laying of pipe on the surface of vegetation; and (iv) drilling of holes for required pipe supports.
6. When undertaking any vegetation clearing pursuant to this Permit, the Permit Holder shall wherever possible avoid access by vehicle, those areas designated by an Environmental Specialist, or designated on the Chevron Barrow Island Geographic Information System Environmental Sensitivity Mapping Database, as having an environmental sensitivity classification of Category 1 or 2. In these areas, management of vegetation disturbance shall be in accordance with the definitions of Category 1 and Category 2 provided in this Permit.
7. Any deviations to the proposed western or northern pipeline alignment options specified in '*RPS Bowman Bishaw Gorham (2006) Barrow Island Oilfield Perentie South Pipeline Route Purpose Permit Application Section 51E Environmental Protection Act 1986 (WA): Supporting Documentation*', will be surveyed by an Environmental Specialist prior to clearing that is pursuant to this Permit. The Environmental Specialist will assess the results of surveys and ensure that any deviations to the proposed alignments: (a) incorporate previously disturbed areas to the extent practicable; and (b) will be located so as to minimise the amount and impacts of clearing within the permitted area in accordance with the requirements of '*Chevron (2006) ASBU Barrow Island Vegetation Management Plan Version 2.0, 26 July 2006*'.
8. When undertaking any clearing pursuant to this Permit, the Permit Holder shall not clear within 50 m of Boodie *Bettongia lesueur* warrens within the area cross-hatched in yellow on the attached Plan 1112/1.
9. When undertaking any clearing pursuant to this Permit, the Permit Holder shall not remove termite mounds within the area cross-hatched in yellow on the attached Plan 1112/1.

Definitions

Environmental Specialist: means a person who is employed by the Permit Holder and who has an environmental qualification, diploma or degree and a capability, to identify flora and fauna habitat of conservation significance, and assess environmental impacts of the Permit Holder's activities.

Category 1: Presumption against clearing. Operation in these areas will be avoided to the extent practicable. Exceptions only on specific approval of Chevron Environmental Team Leader following botanical survey of area to ensure that no Priority flora, restricted vegetation or vegetation comprising important fauna habitat significantly affected.

Category 2: Offroad vehicle access restricted to existing tracks or previously disturbed areas (eg seismic lines, tracks). Disturbance to topsoil or rootstock avoided. No blading will occur outside hardstand areas although localised slashing may be permitted at the discretion of the Environmental Specialist (or delegate). No slashing of Priority Flora or Restricted species identified in Appendix B of '*Chevron [2006] ASBU Barrow Island Vegetation Management Plan Version 2.0, 26 July 2006*' will be undertaken. Areas of potential disturbance subject to botanical survey to ensure that no Priority flora, restricted vegetation or vegetation comprising important fauna habitat significantly affected.

5. References

Astron Environmental (2005a) Perentie South Pipeline Route Environmental Survey August 2005. Report to Chevron Australia.
In: RPS Bowman, Bishop and Gorham (2006)

- Astron Environmental (2005b) Perentie South Pipeline Proposed Tie-in Barrow Island December 2005. Prepared for RPS Bowman Bishaw Gorham. In RPS Bowman, Bishop and Gorham (2006)
- Chevron Australia (2005a) Application to clear native vegetation: Investigatory works. Report to the Native Vegetation Assessment Branch, Department of Industry and Resources. Perth, Western Australia.
- Chevron Australia (2005b) Draft Environmental Impact Statement/Environment Review and Management Programme for the proposed Gorgon Development: Main Report. Chevron Australia, Perth, Western Australia.
- Chevron Australia (2005c) Draft Environmental Impact Statement/Environment Review and Management Programme for the proposed Gorgon Development: Technical Appendices. Chevron Australia, Perth, Western Australia.
- Chevron (2006a) ASBU Barrow Island Vegetation Management Plan Version 2.0, 26 July 2006.
- Chevron (2006b) Data from the Disturbance layer of the Chevron GIS BWI Environmental Database as on 13 July 2006.
- 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.
- DEC (2006) Biodiversity Coordination Section land clearing proposal advice. Advice to Assessing Officer, Department of Industry and Resources (DoIR). Department of Conservation and Land Management, Western Australia.
- 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/License Advice. Advice to Assessing Officer for CPS 1112, Department of Industry and Resources (DoIR). Department of Environment, Western Australia.
- Western Australian Herbarium (2006) FloraBase — The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/>
- Keighery, BJ (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske & Associates (1993) 'State of knowledge on vegetation, Barrow Island,' report prepared for West Australian Petroleum Pty Ltd, Perth. In RPS Bowman, Bishop and Gorham (2006)
- RPS Bowman, Bishop and Gorham (2006) Barrow Island Oilfield Perentie South Pipeline Route Purpose Permit Application Section 51E Environmental Protection Act 1986 (WA): Supporting Documentation
- 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.

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAWA	Department of Agriculture, 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.
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.