



1. Application details

1.1. Permit application details

Permit application No.: 538/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Chevron Texaco Australia Pty Ltd. (Gorgon JV)

1.3. Property details

Property: CROWN RESERVE 11648 (BARROW ISLAND 6712)
Local Government Area:
Colloquial name: Gorgon JV - Barrow Island Section 91 License application (over portion of L1H petroleum production license)

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
1.7		Mechanical Removal	Bore construction

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
Beard vegetation unit 667: Hummock grasslands, shrub-steppe; scattered shrubs over <i>Triodia wiseana</i> & <i>T.sp. indet. aff. angusta</i> . E.M. Mattiske & Associates (1993) described 34 vegetation types for the island.	A flora and vegetation survey was conducted for the proposed CO2 Data Well site by Astron Consulting (ChevronTexaco, 2005). The results recorded eight vegetation types for the site five occurring on undisturbed sites and three on previously disturbed sites: Mixed shrubland of predominantly <i>Acacia bivenosa</i> / <i>Stylobasium spathulatum</i> / <i>Acacia pyriformis</i> / <i>Petalostylis labicheoides</i> over dense <i>Triodia angusta</i> (but sometimes mixed with <i>Triodia wiseana</i>) hummock grassland. Scattered mixed shrubland of <i>Acacia pyriformis</i> / <i>Stylobasium spathulatum</i> / <i>Petalostylis labicheoides</i> over <i>Triodia wiseana</i> hummock grassland with very occasional <i>Triodia angusta</i> hummock. Low Shrubland of <i>Acacia bivenosa</i> over <i>Triodia wiseana</i> hummock grassland on red earth colluvial plains. Open mixed shrubland of <i>Stylobasium spathulatum</i> and <i>Acacia pyriformis</i> over <i>Triodia wiseana</i> hummock grassland with very occasional <i>Triodia angusta</i> hummock.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	There is historical disturbance of vegetation over many parts of Barrow Island. Approximately 60-70% of the proposed clearing contains land that has been previously disturbed, mainly as a result of historical use as a borrow pit and previous seismic surveys. None of the vegetation types described during the survey in either the disturbed or previously disturbed areas are considered to be unique to the proposed CO2 Data Well site. None of the vegetation types for this site are considered to be restricted in their distribution on Barrow Island. The majority of the site contains rehabilitating vegetation typical of other previously disturbed areas in similar habitat types throughout the Island. (ChevronTexaco, 2005; Site visit: DoE Officer 25/5/05). In the likelihood that the CO2 Data Well site will not be used on an ongoing, permanent basis for the purposes of CO2 processes, the site will be rehabilitated according to the approved ChevronTexaco (WA Oil) Earthworks Procedures.

Mixed shrubland of Stylobasium spathulatum/Acacia bivenosa over Triodia wiseana hummock grassland.

Mixed Shrubland of Petalostylis labicheoides and Stylobasium spathulatum over a mixed and sometimes dense Triodia Hummock Grassland sometimes mixed with an open Tussock Grassland in a rehabilitating borrow pit.

Mixed shrubland of Stylobasium spathulatum/Acacia bivenosa/Acacia pyrifolia/Petalostylis labicheoides/Adriana tomentosa over a high and sometimes dense Hummock Grassland of Triodia angusta (sometimes mixed with Triodia wiseana) in a rehabilitating borrow pit.

Mixed scattered shrubland of Senna glutinosa/Acacia bivenosa/Petalostylis labicheoides over an open Triodia Hummock Grassland (predominantly T.wiseana) on a previously disturbed site.

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 may be at variance to this Principle

Barrow Island is an A Class Nature Reserve recognised internationally as a unique biodiversity repository. Barrow Island Nature Reserve has an area of about 23000ha and is the second largest island off the WA coast. It is best known for its abundant mammals, and has a rich bird and reptile fauna, unique and valuable assemblage of subterranean animals and valuable vegetation communities. It has not been impacted by grazing by introduced stock or feral predators (CCWA, 2003).

The area of the island already affected by clearing is considered significant by the Conservation Commission of WA (2003), totalled 657ha at the end of 2001 (ChevronTexaco, 2003) or 2.8% of the island area. Progressive rehabilitation of areas cleared has also occurred (approx. 400ha). The impact of any additional clearing on the biodiversity of the site needs to be seen in this cumulative context.

In addition to this application and the historical clearing there are four other known proposals to clear on Barrow Island. The additional clearing proposals are 105ha, 0.45ha, 2ha and the Gorgon 300ha proposal. Some of this clearing would be rehabilitated. If these are approved, this would bring the total area known to have been cleared on Barrow Island to 4.6% of the reserve.

Ecosystems low in the landscape have been disproportionately and significantly affected by gravel extraction and road building (CCWA, 2003, Trudgen, 1989). Mattiske (2003) vegetation type D2 - Hummock Grassland of Triodia angusta along minor creeklines and drainages lines was identified as being the most impacted by existing development (21.7% disturbed).

This proposal is to clear less than 1.7ha, of which 1.25ha occurs in D2. The majority of the proposed clearing has previously been disturbed.

Methodology

Trudgen 1989
CCWA 2003
ChevronTexaco 2003
Mattiske 1993

(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 may be at variance to this Principle

CALM (2004) lists species that are specifically protected under the Wildlife Conservation Act (S1, Rare or is likely to become extinct)

- Barrow Island Golden Bandicoot (*Isodon auratus barrowensis*),
- Boodie (Barrow Island (*Bettongia lesueur* unnamed subspecies),
- Barrow Island Spectacled Hare-wallaby (*Lagorchestes conspicillatus conspicillatus*),
- Barrow Island Euro (*Macropus robustus isabellinus*),
- Black-flanked Rock-wallaby (*Petrogale lateralis lateralis*),
- Barrow Island Mouse (*Pseudomys nanus ferculinus*),

- Barrow Island Black and White fairy-wren (*Malurus leucopterus edourdi*),
- Blind Gudgeon (*Milyeringa veritas*);
- Barrow Island Bogidomma (*Bogidomma australis*),
- Barrow Island Liagoceradocus (*Liagoceradocus subthalassicus*),
- *Nedsia fragilis*,
- *Nedsia humphreysi*,
- *Nedsia hurberti*,
- *Nedsia macrosculptilis*,
- *Nedsia sculptilis*,
- *Nedsia straskraba*,
- *Nedsia urifimbriata*,
- Barrow Island *Draculoides* (*Draculoides bramstokeri*),
- Barrow Island Millipede (*Speleostrophus nesiotus*)

In addition there are three priority species including:

- *Ramphotyphlops longissimus* (P2)
- Water-rat (Rakali) (*Hydromys chrysogaster*) (P4),
- Eastern Curlew (*Numenius madagascariensis*) (P4)

Signs of transient fauna activity were noted within the proposed CO2 Data Well area. No areas of permanent fauna habitation were recorded for the site. The site selection by the proponent has taken into account the vegetated habitats that are important for the survival of significant fauna such as clumping *Ficus brachypoda*, dense *Melaleuca cardiophylla* shrubs and the dense hummocks of *Triodia* spp. and grasses.

Hare Wallabies and bandicoots favour dense hummocks of *Triodia* (*spinifex*). These species have widespread distributions on the island. There are occasional dense hummocks of *Triodia* spp. in the undisturbed and previously disturbed areas. Although the area proposed to be cleared occupied by these hummocks is small, it is possible that the proposal may be at variance with this Clearing Principle.

Methodology CALM 2004
ChevronTexaco 2005

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

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

A total of 20 plant taxa from 17 genera and 12 families were identified from the eight vegetation types within the CO2 Data Well area (ChevronTexaco, 2005). Members of the Poaceae were the most abundant, with 4 species from 3 different genera found within the survey area. No Declared Rare Flora species were identified.

A number of *Corchorus interstans* individuals (approx. 50) were found occupying the survey areas. *Corchorus interstans* is currently listed by CALM as a Priority 3 species (CALM 2004).

Corchorus interstans is considered to be widespread on Barrow Island occupying a wide range of geographical locations and habitat types. It is also considered capable of prolific regeneration in response to site disturbance, with regenerating individuals readily occupying previously disturbed and rehabilitating areas.

It is likely that the clearing proposed for the CO2 Data Well would not be expected to have a deleterious effect on either the local or regional distribution of this species.

Methodology CALM (2004)
ChevronTexaco (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 significant ecological community.

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

A flora and vegetation survey of the area does not indicate that there are any significant ecological communities likely to be affected by the clearing (ChevronTexaco, 2005).

The DoE database indicates that there are no known Threatened Ecological Communities on Barrow Island.

Methodology GIS Layer: Threatened Ecological Communities
CALM

(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 is one Pre-European vegetation type within the proposed area (Hopkins et al 2001, Shepherd et al. 2001):
- Vegetation association 667: Hummock grasslands, shrub-steppe: scattered shrubs over *Triodia wiseana* & *T. sp. indet. aff. angusta* of which 100% remains with 100% in IUCN Class I-IV Reserves and

reserves/CALM- IBRA Bioregion: Pilbara Beard vegetation association:	Pre-European area (ha)	Current extent (ha)	Remaining %*	Conservation status**	% in managed land
	17,944,694	17,944,694	100	Least concern	0
	667	19,949	19,949	100	Least concern

The Beard Vegetation mapping only indicates one vegetation type occurring over the proposed clearing site and only two for the entire island. More detailed vegetation mapping survey undertaken in 1993 (Mattiske 1993) identified 34 vegetation types.

Mattiske E.M. & Associates (1993) identified 34 vegetation types on Barrow Island. Two Mattiske vegetation types occur on the proposed site - D2 (1.25ha) and V1 (0.02ha). The proposed clearing will impact on 0.114% and 0.0003% of these vegetation types respectively.

Ecosystems low in the landscape have been disproportionately and significantly affected by gravel extraction and road building (CCWA, 2003, Trudgen, 1989). Mattiske (2003) vegetation type D2 - Hummock Grassland of *Triodia angusta* along minor creeklines and drainages lines was identified as being the most impacted by existing development (21.7% disturbed). Approximately sixty percent or 0.75ha of the 1.25ha of D2 proposed to be cleared has been previously cleared. This clearing would increase the amount of clearing of the D2 vegetation type by 0.007%.

Astron Consulting (ChevronTexaco 2005) have undertaken a more detailed survey of the area proposed to be cleared and identified eight vegetation types, comprising five in undisturbed areas and three of previously disturbed vegetation types that are rehabilitating.

Methodology EM Mattiske & Associates (1993)
ChevronTexaco (2005)
Hopkins et al (2001)
DoE GIS interrogation of Mattiske (1993) Vegetation supplied by ChevronTexaco

(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

The proposed clearing is associated with two diffuse minor non-perennial watercourses which leads into the ocean. Impact on the watercourse to the north of the proposed clearing has been mitigated by reducing the size of the pad so that no direct clearing of the watercourse in this area occurs. Further levee banks constructed around the perimeter of the cleared area will prevent contamination of runoff.

It is considered that there will be little impact on the second minor watercourse that appears on the GIS layer to traverse through the middle of the proposed clearing as it appears to have been previously modified as a result of road construction. The presence of this minor watercourse was not observed during field visit (DoE site visit).

Due to a reduction to the clearing area and management proposed, the proposal is not likely to be at variance with this Clearing Principle.

Methodology GIS Layer: Hydrography, linear - DOE 01/02/04

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

Comments Proposal is not at variance to this Principle

Previous DAWA advice (2004) for clearing on Barrow Island, it is considered that the clearing of 1.7ha will not result in appreciable on site and off site land degradation.

Methodology DAWA (2004)

(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 for the protection of flora and fauna including two priority flora species, fauna declared Specially Protected, and Priority listed fauna under the Wildlife Conservation Act.

Methodology CALM (2004)
CCWA (2003)

(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

There is no permanent water in the many drainage channels that traverse the island. These contain water only after cyclones.

The GIS hydrography layer indicates that the proposed clearing is associated with diffuse minor non-perennial watercourses which lead into the ocean. A previously constructed road appears to have intersected the flow of the watercourse.

Impacts on the watercourses in this area will be mitigated by constructing edge booms or spoon drains that will contain rainwater until it soaks away or evaporates (additional documentation submitted). Ground under the rig will be drained via shallow spoon drains into the cellar where a sump pump will recycle fluids back to the drilling fluids system. This will prevent contamination of runoff and will minimise the impact on downstream habitats. Due to the management proposed, the proposal is not likely to be at variance with this Clearing Principle.

Methodology ChevronTexaco advice TRIM HD24130

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

Comments Proposal is not at variance to this Principle

The area is not prone to flooding under normal climatic conditions. Surface water flows/flooding are unlikely to be different as a result of vegetation clearing.

The amount of clearing is localised and incidental and therefore this proposal is not at variance with this Clearing Principle.

Methodology DoE Site visit
DoE GIS layers:
Isohyets - BOM 09/98
Evaporation Isopleths - BOM 09/98
Topographic contours, Statewide - DOLA 12/09/02
Hydrography, linear - DoE 01/02/04

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

Comments

N/A

Methodology

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Bore	Mechanical	1.7	Grant	The proposed clearing occurs in an A class nature reserve that is recognised for its

high level of biodiversity. As such the proposal is at variance with two principles. Principle a - native vegetation should not be cleared if it comprises a high level of biological diversity; and principle 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. Negotiation with the proponent has reduced the area proposed to be cleared from 1.7ha to just over 1ha. The majority of the site was previously cleared. It is recommended to grant the proposal to clear 1.06ha.

If the site is not required for long term monitoring it will be rehabilitated. Once the CO2 data well has been established the area of clearing will also be reduced through earthworks and rehabilitation.

The proponent will make available the details of the environmental assessment report and the clearing of the site to be recorded in the environmental sensitivity database maintained by ChevronTexaco.

5. References

- Astron Environmental Pty Ltd (2005) CO2 Data Well - Barrow Island Environmental Survey March 2005. Report to RPS Bowman Bishaw Gorham. Ref. 2715-RV-01. TRIM IN20905 ADD.
- CALM Land clearing proposal advice for CPS 123/1. Advice to A/Director General, Department of Environment (DoE). Department of Conservation and Land Management, Western Australia. DoE TRIM ref HD17983
- CCWA (2003) Biodiversity Conservation Values on Barrow Island Nature Reserve and the Gorgon Gas Development. Advice to Government from the Conservation Commission of Western Australia (July 2003).
- Chevron Texaco Australia Pty Ltd (2005) Gorgon Development: Application to Clear Native Vegetation Supporting Information. Unpublished Document. Department of Environment Reference: TRIM KNI725
- ChevronTexaco (2003) Environmental, Social and Economic Review of the Gorgon Gas Development on Barrow Island.
- DAWA Land degradation assessment report for CPS123/1. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture Western Australia. DoE TRIM ref:HD17913
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALM Science after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- 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.
- 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.
- Trudgen, M (1989) 'A report on the progress of the regeneration of vegetation on areas disturbed during oil production on Barrow Island.' Report prepared for West Australian Petroleum Pty Ltd.