



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 3771/1
Permit Holder:	Woodside Energy Limited
Duration of Permit:	29 August 2010 – 29 August 2015

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of onshore geotechnical and hydrological investigations for the Browse Liquefied Natural Gas Precinct.

2. Land on which clearing is to be done

Licence Number 1606-2008-01 Licence to Occupy Crown Land in Accordance with Section 91 of the *Land Administration Act 1997* (WA)

Located within the following properties:

Lot 259 on Plan 220696, Waterbank

Manari Road reserve, Waterbank (PIN 11735472)

3. Area of Clearing

The Permit Holder must not clear more than 25 hectares of native vegetation within the area hatched yellow on attached Plan 3771/1.

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

5. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for activities to the extent that the Permit Holder has the power to clear native vegetation for those activities under the *Land Administration Act 1997* or any other written law.

6. Compliance with Assessment Sequence and Management Procedures

Prior to clearing any native vegetation under conditions 1, 2 and 3 of this Permit, the Permit Holder must comply with the Assessment Sequence and the Management Procedures set out in Part II of this Permit.

PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

7. Avoid, minimise etc clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- (a) avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

8. Environmental management plan

- (a) The Permit Holder must prepare, implement and adhere to an *EMP*.
- (b) The *EMP* must include:
 - (i) an Environmental Risk Assessment;
 - (ii) a plan for managing the *impacts*;
 - (iii) a table setting out the Permit Holder's commitments to the *EMP*'s requirements; and
 - (iv) a program for monitoring compliance with the Permit Holder's commitments.
- (c) Once the Permit Holder has developed an *EMP*, the Permit Holder must provide that *EMP* to the CEO for the CEO's approval. The clearing to which the *EMP* relates and the implementation of the *EMP* shall not take place until the Permit Holder receives approval from the CEO.

9. Weed control

- (a) When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:
 - (i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
 - (ii) ensure that no *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
 - (iii) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.
- (b) At least once in each 12 month period for the *term* of this Permit, the Permit Holder must remove or kill any *weeds* growing within areas cleared under this Permit.

10. Retain vegetative material and topsoil, revegetation and rehabilitation

The Permit Holder shall:

- (a) Retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) within two months following completion of onshore geotechnical and hydrological investigations for the Browse Liquefied Natural Gas Precinct, *revegetate* and *rehabilitate* areas no longer required for the purpose for which they were cleared under this Permit by:
 - (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land; and
 - (ii) ripping the ground on the contour to remove soil compaction; and
 - (iii) laying the vegetative material and topsoil retained under condition 10(a) on the cleared area(s).
- (c) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 10(b) of this Permit:
 - (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
 - (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 10(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.

PART III - RECORD KEEPING AND REPORTING

11. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit.

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the species composition, structure and density of the cleared area;
 - (ii) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (iii) the date that the area was cleared; and
 - (iv) the size of the area cleared (in hectares).
- (b) In relation to the environmental management plan pursuant to condition 8, a description of the environmental management plan activities undertaken, in accordance with that environmental management plan.
- (c) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 10 of this Permit:
 - (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (iii) the size of the area *revegetated* and *rehabilitated* (in hectares); and
 - (iv) the species composition, structure and density of *revegetation* and *rehabilitation*.

12. Reporting

- (a) The Permit Holder must provide to the CEO, on or before 30 June of each year, a written report of records required under condition 11 of this Permit and activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.
- (b) Prior to 29 May 2015, the Permit Holder must provide to the CEO a written report of records required under condition 11 of this Permit where these records have not already been provided under condition 12(a) of this Permit.

Definitions

The following meanings are given to terms used in this Permit:

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

EMP means environmental management plan;

fill means material used to increase the ground level, or fill a hollow;

impacts means any impact of clearing on environmental values;

local provenance means native vegetation seeds and propagating material from natural sources within 10 kilometres of the area cleared;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;

term means the duration of this Permit, including as amended or renewed;

weed/s means a species listed in Appendix 3 of the "Environmental Weed Strategy" published by the Department of Conservation and Land Management (1999), and plants declared under section 37 of the *Agriculture and Related Resources Protection Act 1976*.

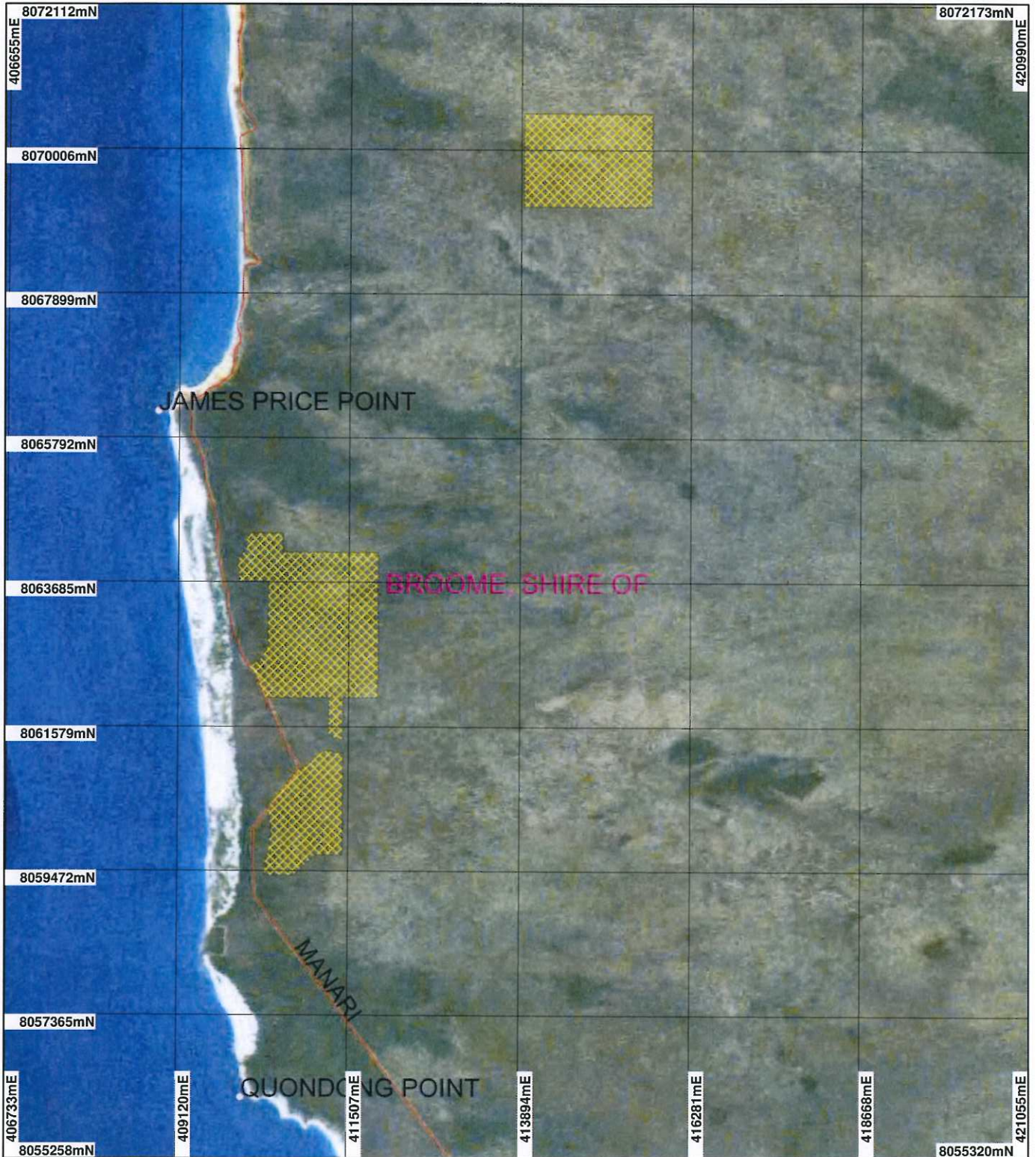


Matthew Warnock
ACTING MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

30 July 2010

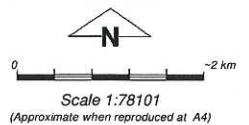
Plan 3771/1



LEGEND

- Cadastre
- Local Government Authorities
- Road Centrelines
- Clearing Instruments
- Areas Approved to Clear

Geographic Names
Western Australia Landsat
Mosaic 25m - AGO 2006



Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

M Warnock Date 30/7/10

M Warnock
Officer with delegated authority under Section 20 of
the Environmental Protection Act 1986

Information derived from this map should be
confirmed with the data custodian acknowledged
by the agency acronym in the legend.



Department of
Environment and Conservation

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1. Application details

1.1. Permit application details

Permit application No.: 3771/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Woodside Energy Limited

1.3. Property details

Property: LOT 259 ON PLAN 220696 (House No. 259 WATTLE WATERBANK 6725)
ROAD RESERVE (WATTLE WATERBANK 6725)
LOT 259 ON PLAN 220696 (House No. 259 WATTLE WATERBANK 6725)

Local Government Area: Shire of Broome
Colloquial name: Browse LNG Precinct

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
25		Mechanical Removal	Geotechnical investigations

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 Association: 750: Shrublands, pindan; Acacia tumida shrubland with grey box & cabbage gum medium woodland over ribbon grass & curly spinifex. (Shepherd, 2007)	The applied area is located at James Price Point (JPP), within the Pindanland subregion of the Dampierland IBRA bioregion. Pindanland comprises gently undulating sandplain landscapes with wooded shrublands dominated by wattles and occasional low hills with hummock grasslands (DEC, 2009a). The region's extensive coastal plains comprise mudflats supporting mangal, samphire and couch grasslands fringed by low paperbark forest, as well as beach strand and coastal limestone outcrops with shrub-Spinifex communities (DEC, 2009a).	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994)	Vegetation condition was determined from aerial photography, photographs and information supplied by the applicant (WEL, 2010).
	The vegetation under application and in the surrounding area is considered to be in Good to Very Good (Trudgen, 1988) condition (Biota, 2009a). However, recent fire activity may have affected the accuracy of the vegetation condition mapping in the burnt areas (Aecom, 2010b).	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994)	
	Disturbance as a result of altered fire regime is evident in the James Price Point area (Biota, 2009a). As a result of more frequent and higher intensity fires, the condition of the vegetation in the local area has been negatively impacted (Aecom, 2010b).		
	Weed invasion is reported in some areas within the vicinity of the vegetation under application, with infestations tending to be relatively localised to roadside areas (Biota, 2009a). Vegetation in areas with no road access show little evidence of weed invasion or physical disturbance as a result of human activities (Biota, 2009a).		

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**
Woodside Energy Limited (WEL) proposes to clear up to a total of 25 hectares of native vegetation across three areas at James Price Point (JPP), for the purpose of conducting onshore geotechnical site investigations to inform the design of the proposed Browse Liquefied Natural Gas (LNG) Precinct. Geotechnical investigations will require clearing of vegetation for boreholes, cone penetrometer tests, test pits, drill pads and access tracks.

The three applied areas total 760ha (WEL, 2010a) and are located within an expansive area of very good to excellent (Keighery, 1994) condition vegetation. The JPP area is located approximately 60km north of Broome, on the Dampier Peninsula. The applied area is reported to be located in a relatively low risk area and lacks many of the natural features that are unique to the North Kimberley hotspot (Aecom, 2010a).

The majority of the applied area is dominated by Pindan vegetation of varying composition and density which is regionally widespread (Aecom, 2010a). A total of 308 native vascular flora species from 175 genera belonging to 67 plant families has been recorded from the JPP area (Biota, 2009a). The number of native vascular flora recorded from the JPP area is considered to be moderate to high, taking into account the size of the area and the habitats present (Biota, 2009a). The JPP area is considered to have a moderate to high conservation value for flora (Biota, 2009a).

Twenty seven flora species considered to be of conservation significance are known to occur, or may potentially occur, within the proposed footprint of the Browse LNG Precinct at JPP (Aecom, 2010a), which includes part of the area currently under application and is representative of the applied area. Numerous Priority flora species have been recorded within the local (40km radius) area and in some cases these observations represent significant range extensions for Priority species and records of previously undescribed taxa (Biota, 2009a; Aecom, 2010a).

Coastal monsoon vine thickets (both evergreen and deciduous) occur 50m from the area under application and are a threatened ecological community (TEC) endorsed as 'Vulnerable' by the Minister for Environment. Other vegetation types of particular conservation significance comprise the vegetation of drainage basins (High conservation value), and the coastal heaths and coastal communities units (Moderate conservation value) (Biota, 2009a).

A fauna assessment found evidence of a total of 115 vertebrate species within the proposed footprint of the Browse LNG Precinct at JPP (Aecom, 2010b). Several species listed as Vulnerable under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) may exist within the area under application. It is considered likely that the Greater Bilby (*M. lagotis*) may inhabit much of the Dampier Peninsula in very low densities and while diggings and burrows observed during fauna surveys were not conclusive of this species, they may suggest the presence of a few vagrant individuals (Aecom, 2010b). Extensive deciduous and evergreen vine thicket provides suitable habitat for the Golden-backed Tree-rat (*M. macrurus*), however, there was no further evidence for occurrence of this species in the JPP area (Aecom, 2010b). The area under application is not within the deciduous and evergreen vine thicket vegetation. The applied area may contain suitable habitat for the EPBC Act listed Golden Bandicoot (*Isodon auratus*), which was once widespread in arid and semi-arid areas, however is now restricted to grasslands, grassy woodlands and vine thickets of the Kimberley (Aecom, 2010b).

The JPP area is susceptible to weed invasion adjacent to disturbed areas and a shift in vegetation structure from inappropriate fire regimes (Aecom, 2010a). Twelve weed species have been recorded within the area under application, with one species, *Sida acuta*, listed as a Declared Plant under the Agriculture and Related Resources Protection Act 1976. Nine of the weed species present are considered to have the potential to threaten the integrity of the vegetation assemblages of the applied area (Aecom, 2010a). Any future disturbance in the area should include appropriate management to limit the spread or introduction of invasive weeds species (Aecom, 2010a). Weed control and management conditions will mitigate this impact.

Given the above, the area under application may comprise a high level of biological diversity and as such, the proposed clearing of 25 hectares may be at variance to this Principle.

WEL have advised that an environmental management Plan (EMP) will be developed within which all activities associated with the proposed Geotechnical Site Investigation Program will be managed by WEL and it's contractors. The EMP will manage impacts identified by WEL in it's environmental risk assessment (EMP). This EMP has identified minor impacts to habitat, alteration to geomorphology, fire, weeds, noise, vibration, air emissions, accidental pollution (fuels and oils) and unauthorised use of tracks as potential environmental risks to manage. A preliminary summary of environmental objectives, standards and commitments likely to be included in the EMP was provided (WEL, 2010b).

WEL have advised that the final EMP will be issued to all Contractors prior to commencement of activities (WEL, 2010b).

Methodology

References:

Aecom, 2010a
Aecom, 2010b
Biota, 2009a
Keighery, 1994
WEL, 2010a
WEL, 2010b

GIS Databases:

- Carnot 50cm Orthomosaic - Landgate 2007
- DEC Managed Lands & Waters - DEC 28/10/09

- Evapotranspiration, Area Actual - BOM 30/09/01
- Groundwater Salinity, statewide - DoW 13/07/06
- Hydrogeographic Catchments, Catchments - DoW 01/06/07
- Hydrogeology, statewide - DoW 13/07/06
- Hydrography, linear - DoW 13/7/06
- Rainfall, Mean Annual - BOM 30/09/01
- Pre-European vegetation - DA 01/01
- SAC Biodatasets - 09/06/10
- Soils, Statewide - 30/11/99

(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

There are no known records of conservation significant fauna species mapped as occurring within the area under application.

Three species of conservation significance were identified within the JPP area during a fauna survey conducted in 2009 (Aecom, 2010b). These were the Priority 4 Chestnut-backed Button-quail (*Turnix castanota*) and Eastern Curlew (*Numenius madagascariensis*) and Schedule 4 Peregrine Falcon (*Falco peregrinus*) (Aecom, 2010b). These three species also occur in other regions, with the Chestnut-backed Button-quail recorded in the Kimberley region and the Northern Territory, the Eastern Curlew being widespread around coastal Australia and the Peregrine Falcon is widespread throughout Australia and internationally (Aecom, 2010b).

There are records of the Greater Bilby (*Macrotis lagotis*) in the Broome hinterland during the last 10 to 15 years (Aecom, 2010b). There are three records of this vulnerable species in the local area (40km radius), with the closest mapped as 9.9km northwest of the applied area. No evidence of tracks or distinctive burrows were observed for *M. lagotis* during a fauna survey of the proposed footprint of the Browse LNG Precinct at JPP, in 2009 (Aecom, 2010b). However, foraging holes that may suggest the presence of a few vagrant *M. lagotis* individuals were observed during this survey (Aecom, 2010b). *M. lagotis* formerly occurred across the arid and semiarid zones of 70 per cent of continental Australia, however, is now restricted to 20 per cent of its former range, surviving in parts of the Tanami Desert (Northern Territory), Pilbara and southern Kimberley (Western Australia), and an isolated population in southwest Queensland (DEWHA, 2005). *M. lagotis* is a wide ranging species that occurs in a broad range of habitats and is considered likely to occupy much of the Dampier Peninsula in very low densities (Aecom, 2010b).

The Golden-backed Tree-rat (*Mesembriomys macrurus*) is listed as vulnerable under the EPBC Act and classified as a Priority 4 listed species by the DEC and was identified as being likely to occur within the JPP area due to the presence of suitable habitat (Aecom, 2010b). This species is known to occur in coastal areas of the Northern Kimberley, with records from Derby, 160 km east of James Price Point, extending north up to the Mitchell Plateau. There is also a mapped record of the species 32.8km south-southeast of the area under application. While there was no confirmed direct or indirect evidence of the Golden-backed Tree-rat (*Mesembriomys macrurus*) from a fauna assessment undertaken within the proposed footprint of the Browse LNG Precinct, it may occur, based on potential fauna habitat and historic records (Aecom, 2010b).

Other vulnerable species such as the Red Goshawk (*Erythrotriorchis radiatus*), Australian Painted Snipe (*Rostratula benghalensis australis*) and Golden bandicoot (*Isodoon auratus*) are mapped as occurring in the local area (40km radius) and it is possible that these species may exist within the area under application due to the presence of suitable habitat (Aecom, 2010b). *I. auratus* has been recorded 18.6km north-northeast of the applied area and while recent fauna surveys found no evidence of its presence in the JPP area, it is considered likely to occur within the vine thickets adjacent to the applied area (Aecom, 2010b; Biota, 2009b). This species is now restricted to grasslands, grassy woodlands and vine thickets of the Kimberley (Aecom, 2010b) and as such, the vegetation proposed to be cleared may support this habitat.

Gouldian Finch (*Erythrura gouldiae*) and Northern Quoll (*Dasyurus hallucatus*) are listed as endangered under the EPBC Act, however, given the lack of preferred habitat types of these species within the area under application (Aecom, 2010b), the presence of these species within the applied area is considered to be unlikely.

The JPP area provides habitat for a range of migratory bird species, including migratory waders and terns that breed in the northern hemisphere (Aecom, 2010b). However, in comparison with other sites on or near the Dampier Peninsula, and in other parts of north-western Australia (for example Roebuck Bay, Eighty Mile Beach, Bidyadanga, Dessault Bay), the coastline between Coulomb Point south to Quondong Beach has relatively low numbers of migratory shorebirds, compared with other parts of north-western Australia. The lack of large shorebird assemblages is most probably due to the lack of intertidal mudflats and extensive sandflats, which are optimal foraging habitat for shorebirds in this region (Aecom, 2010b).

The proposed clearing is of a moderate size and scattered nature and as the vegetation surrounding the area under application comprises vegetation in very good to excellent (Keighery, 1994) condition with a high remaining extent, the applied area is not considered significant habitat for indigenous fauna. Therefore, the proposed clearing is considered not likely to be at variance to this Principle.

- Methodology** References:
 Aecom, 2010b
 Biota, 2009b
 DEWHA, 2005
 Keighery, 1994
 GIS Databases:
 - Carnot 50cm Orthomosaic - Landgate 2007
 - Pre-European vegetation - DA 01/01
 - SAC Biodatasets - 09/06/10
 - Soils, Statewide - 30/11/99

(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**
 There are no known records of declared rare flora species within the area under application. There are no records of declared rare flora species mapped as occurring within the local area (40km radius). Areas proposed to be cleared will be assessed by a suitably qualified environmental specialist for site sensitivities such as Rare and Priority flora prior to the commencement of clearing (WEL, 2010a).

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

- Methodology** References:
 WEL, 2010a
 GIS Databases:
 - Carnot 50cm Orthomosaic - Landgate 2007
 - Pre-European vegetation - DA 01/01
 - SAC Biodatasets - 09/06/10
 - Soils, Statewide - 30/11/99

(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 may be at variance to this Principle**
 Two of the areas under application are mapped as being within the buffer of the vine thickets on coastal sand dunes of the Dampier Peninsula threatened ecological community (TEC). These monsoonal vine thickets are reported to be restricted to fire protected sand dunes and low lying drainage areas behind beach dunes and are usually located within a few hundred metres of the coastline (Aecom, 2010b). The proposal provides a buffer of 50m from the boundary of the vine thicket TEC (WEL, 2010a).

There are approximately 2,710 ha of the 'Vine thickets on coastal sand dunes of Dampier Peninsula' community (vine thicket TEC) in a total of 77 occurrences recorded by DEC. There are several small additional occurrences of this TEC that have been located, but that have not yet been mapped. Size of occurrences recorded varies from 0.3ha to 508ha. The largest occurrence is at James Price Point, adjacent to the proposed clearing under application. This occurrence is the largest known occurrence of the vine thicket TEC. The average patch size is about 35ha noting that the accuracy of boundary mapping of occurrences varies (DEC, 2010).

The original boundary mapping of this TEC, in the early 2000s, did not take into account condition issues. The condition of some patches may have declined since the original mapping. This may be to the point of no longer being considered extant if the condition has declined to degraded, for example, as a consequence of inappropriate fire regimes. Some occurrences may also have since been impacted by clearing for outstations and other purposes. This would require on-ground survey data to verify (DEC, 2010).

The largest occurrences of vine thicket TEC are:

- 508ha (James Price Point) (representing ~19% of the total area of the TEC mapped)
- Next largest approximately 198 ha at One Arm Point townsite (indigenous land)
- Next largest 154ha north of Cape Borda – north west Dampier Peninsula (Pastoral Lease).

(DEC, 2010)

Of the area of the community mapped:

- About 988 ha (~36%) occurs on Indigenous managed lands
- About 159 ha (~6%) occurs on Pastoral Stations (Note: some Pastoral Stations are also managed by Indigenous groups)
- About 1,018 ha (~38%) occurs on UCL – unspecified land managers/usage.
- About 242 ha (~9%) occurs on land vested with the Shire of Broome, including Coulomb Point Nature Reserve and Minyirr Coastal Park (Vine 01)
- About 302ha (~11%) occur on private freehold land
- About 0.8ha (~0.03%) occurs on road reserves.

(DEC, 2010)

The north-south extent of the two southern areas of the proposed clearing by Woodside is about 5km, all of which is adjacent to the vine thicket TEC. The total north-south length of the large vine thicket occurrence at James Price Point is about 11.5km (DEC, 2010)

Given the interconnectedness of the rainforest ecosystem patches it is also possible that impacts to this large occurrence at James Price Point may also have additional, as yet unknown effects on other occurrences of the Dampier Peninsula monsoon vine thicket TEC through loss of function of a patch that may act as a linkage through to other occurrences (DEC, 2010)

The impacts of the proposed clearing and purpose of the clearing at James Price Point is not known, but in the absence of appropriate supporting data from the proponent, the potential for significant ecological impacts, mainly through hydrological impacts that may extend along most of the length of the occurrence at James Price Point, but also possibly loss of habitat for the frugivores that are believed essential for regeneration of the community cannot be discounted (DEC, 2010).

The clearing of vegetation in close proximity to the vine thicket TEC may impact surface flows or quality, and increased weed invasion may occur as a consequence of these changes. Clearing may also impact fauna that act as dispersal agents for native flora that comprise the vine thickets TEC (DEC, 2010). The purpose for which the clearing is required also may alter groundwater or surface water flows or quality, increase fire risk, and increase disturbance due to increased access by recreational users and construction staff.

The proposed clearing is located to the east of the TEC and sheet surface water in the area flows in a westerly direction (WEL, 2010a). Therefore, increased surface water flow as a result of altered hydrological regime due to clearing native vegetation may have detrimental impacts on the vine thicket TEC (DEC, 2010). The applicant advised that tracks and structures will be designed to minimise impacts on surface water flow (WEL, 2010a).

Clearing native vegetation may alter ground water levels and regimes which may impact the vine thicket TEC, as it is considered to be at least partially groundwater dependent (DEC, 2010). However, due to the moderate scale of the proposed clearing (25ha within 760ha application area) and it being spread across an expansive area of very good to excellent (Keighery, 1994) condition vegetation, the proposed clearing may not have a significant impact on the groundwater hydrology of the JPP area and may not pose a significant threat to the TEC.

Supporting information provided by WEL (2010b) provides the following information:

- Monsoon vine thicket vegetation in the James Price Point area appears to be maintained by both surface and groundwater flows (pers. comm. Ray Froend).
- The surface water input pathways are directly through run-on into the area during the wet season, and indirectly via recharge of the local superficial aquifer.
- A desk top assessment of the hydrology at James Price Point was undertaken in 2010 (BG&E, 2010) to delineate the catchments in the Browse LNG (BLNG) Precinct.
- The majority of the Geotechnical Site Investigations are located in two identified catchments.
- A 100m buffer on either side has been provided for an identified drainage channel in one of the catchments.
- Surface water flows from the catchments move in a south-westerly direction towards their associated drainage channels. These channels take the flows towards the coast where they are intercepted by the coastal dune system and infiltrate into the superficial aquifer.
- Any small increases in sediment caused by clearing activities are expected to be absorbed during overland flow prior to reaching the monsoon vine thicket.
- It is noted that the existing Manari Road bisects the monsoon vine thicket along an approximately 4km section to the south of James Price Point. Manari Road has had significant grading works and is cut into the landscape. An informal assessment by Kevin Kenneally (Pers. Comm) and Biota (Pers. Comm) following site survey works in the area indicates that Manari Road has no apparent impact on vegetation condition within the monsoon vine thicket downstream of the road or on hydrology within the area.

WEL have advised that an environmental management Plan (EMP) will be developed within which all activities associated with the proposed Geotechnical Site Investigation Program will be managed by WEL and its contractors (WEL, 2010b).

Given the above, the vegetation under application may be necessary for the maintenance of the vine thicket TEC located within 50m of two of the applied areas.

Methodology References:
Aecom, 2010b
DEC, 2010
Keighery, 1994
WEL, 2010a
WEL, 2010b

GIS Databases:

- Carnot 50cm Orthomosaic - Landgate 2007
- Pre-European vegetation - DA 01/01
- SAC Biodatasets - 09/06/10
- Soils, Statewide - 30/11/99

(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

The vegetation proposed to be cleared is mapped as being of pindan shrublands (Beard Vegetation Association 750). This vegetation association is regionally widespread, retaining 99.82% and 99.72% of its pre-European extent within the Dampierland IBRA region and Shire of Broome, respectively (Shepherd, 2007). A small amount of clearing has previously occurred within and adjacent to the area under application for the construction of Manari Road.

The vegetation under application is not significant as a remnant of native vegetation in an area that has been extensively cleared and is not at variance to this Principle.

Methodology

References:

Shepherd, 2007

GIS Databases:

- Carnot 50cm Orthomosaic - Landgate 2007
- Pre-European vegetation - DA 01/01
- SAC Biodatasets - 09/06/10

(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

Mapping and proposal details provided by the applicant indicate that vegetation growing in association with a watercourse is not intended to be cleared (WEL, 2010a). The location of the southern two application areas provides a buffer of 100m to the nearest watercourse (WEL, 2010a). No permanent watercourses exist within the area under application, however there are several minor ephemeral drainage lines within the vicinity of the proposed clearing.

An ANCA wetland, Willie Creek Wetland comprising mangroves, lake, areas subject to inundation and saline coastal flats, is located approximately 12km south of the area under application. Due to the size and scattered nature of the proposed clearing and the distance from the vegetation under application, the proposed clearing is considered unlikely to impact this wetland.

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

Methodology

References:

WEL, 2010a

GIS Databases:

- ANCA, Wetlands - 26/03/99
- Carnot 50cm Orthomosaic - Landgate 2007
- Hydrogeology, statewide - DoW 13/07/06
- Hydrography, linear - DoW 13/7/06
- RAMSAR, Wetlands - 15/10/09

(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 Dampier Peninsula is located within the Fitzroy Trough geological area, which is a major subdivision of the Canning Sedimentary Basin. The Dampier Peninsula is underlain by Jurassic marine sediments (sandstone and mudstone), with occasional outcrops of Early Cretaceous and Cretaceous rocks in some locations, including calccrete in coastal situations on Waterbank Station (McKenzie and Kenneally, 1983 cited in Biota, 2008a).

The soils mapped as occurring within the areas under application include the gently undulating red earthy sands of the Pindan country sandplains, with a few small rocky sandstone residuals and no external drainage. Severe erosion of these soils can occur following the clearing of vegetation (KDC, 2010), however this can be minimised providing relief is low and large bare patches are not exposed to wind.

The site investigations will be programmed to be completed during the dry season, when surface water flow is minimal and cyclonic activity is unlikely (WEL, 2010a). Management measures will be implemented to minimise impacts to surface water flow, disruption to rootstock and to stabilise active areas (WEL, 2010a). All cleared

areas will be rehabilitated and landscaped in the event the proposed Browse LNG Precinct does not proceed (WEL, 2010a).

Due to the heavy rainfall that the area experiences and the erosive nature of the soils within the areas under application, it is considered that the clearing of native vegetation may result in significant erosion and degradation of cleared areas. However, due to the moderate scale of the proposed clearing (25ha within 760ha application area), spread across an expansive area of very good to excellent (Keighery, 1994) condition vegetation, the proposed clearing is considered unlikely to cause significant appreciable erosion or land degradation and is not likely to be at variance to this Principle.

- Methodology** References:
Biota, 2008a
KDC, 2010
Keighery, 1994
WEL, 2010a
GIS Databases:
- Acid Sulfate Soils Risk Map, Pilbara Coastline - DEC 06/09/06
- Evapotranspiration, Area Actual - BOM 30/09/01
- Groundwater Salinity, statewide - DoW 13/07/06
- Hydrogeology, statewide - DoW 13/07/06
- Rainfall, Mean Annual - BOM 30/09/01
- Soils, Statewide - 30/11/99
- Topographic Contours, Statewide - DOLA 12/09/02

(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 not likely to be at variance to this Principle

The area under application is located approximately 10.5km south of the Class A Coulomb Point Nature Reserve. Due to the size and sporadic layout of the proposed clearing and the distance from the vegetation under application, the proposed clearing is considered not likely to impact this conservation area.

For the reasons above, it is considered that the proposed clearing is not likely to be at variance to this Principle.

- Methodology** GIS Databases:
- DEC Managed Lands & Waters - DEC 28/10/09
- Pre-European vegetation - DA 01/01
- Soils, Statewide - 30/11/99

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

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

The proposed clearing is within the Cape Leveque Coast Basin catchment area. It is not within a Public Drinking Water Source Area or an area proclaimed under the Country Areas Water Supply Act (Part II) 1947.

The applied area is within an area proclaimed under the Rights in Water and Irrigation Act 1914 (RIWI Act) for groundwater. The applicant has advised that hydrogeological and geotechnical drilling operations will use a biodegradable, water-based, non-toxic drilling fluid (Bentonite), with the possible use of additives (such as Potassium Chloride) should the drilling conditions require (WEL, 2010a). Drill fluid will be recovered and disposed of appropriately offsite and drill cuttings will be discharged into the boreholes (WEL, 2010a). After use, boreholes will be sealed minimise the risk of ground water contamination (WEL, 2010a).

Interference with minor watercourses and the clearing of riparian vegetation may result in the deterioration of surface water quality due to increased sedimentation. The applicant advised that none of the drainage lines present within, or adjacent to, the applied areas will be impacted by clearing (WEL, 2010a).

Given the above, it is considered unlikely that the proposed clearing of native vegetation would cause surface or groundwater quality deterioration.

- Methodology** References:
WEL, 2010a
GIS Databases:
- Country Area Water Supply Act (Part IIA) Clearing Control Catchments - DoW 29/06/06
- Hydrogeographic Catchments, Catchments - DoW 01/06/07
- Hydrogeology, statewide - DoW 13/07/06
- Public Drinking Water Source Areas (PDWSAs) - DoW 07/02/06
- Rainfall, Mean Annual - BOM 30/09/01
- RIWI Act, Areas - DoW 05/04/02

- RIWI Act, Groundwater Areas - DoW 13/07/06
- RIWI Act, Irrigation Districts - DoW 13/07/06
- Soils, Statewide - 30/11/99
- Topographic Contours, Statewide - DOLA 12/09/02

(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

The low elevation, heavy summer rainfall patterns and extensive pindan sandplain soils of the Dampier Peninsula result in sheet flooding being the most widespread pattern of surface water drainage in the applied area (Biota, 2009a). The area under application is reported to drain along a slight gradient from the east to the western coastline (WEL, 2010a). There are several minor ephemeral watercourses in the vicinity of the applied area, with the closest mapped drainage line transecting the northern most application area and another passing between the southern two applied areas. It is expected that, during the wet season, the overland sheet flow would drain into the areas of these watercourses and then towards the coast. The applicant advised that works will be programmed for completion during the dry season, when no surface water flow is present and cyclonic activity is unlikely (WEL, 2010a).

Due to the moderate scale (25ha) and widespread (within three areas totalling 760ha over a much larger area) locations of the proposed clearing and the very good to excellent (Keighery, 1994) condition of the surrounding vegetation, it is unlikely that this proposal will exacerbate the incidence or intensity of flood events. Therefore, the proposed clearing is considered not likely to be at variance to this Principle.

Methodology

References:

Biota, 2009a

Keighery, 1994

WEL, 2010a

GIS Databases:

- Evapotranspiration, Area Actual - BOM 30/09/01
- Hydrogeology, statewide - DoW 13/07/06
- Pre-European vegetation - DA 01/01
- Rainfall, Mean Annual - BOM 30/09/01
- Soils, Statewide - 30/11/99
- Topographic Contours, Statewide - DOLA 12/09/02

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

Comments

The area under application is within Unallocated Crown Land, the proponent holds a Licence to Occupy Crown Land, in accordance with Section 91 of the Land Administration Act 1997, for the purpose of site investigation activities associated with the establishment of the proposed Kimberley LNG gas precinct and associated facilities (WEL, 2010a).

The Browse LNG Precinct was referred to the EPA in April 2008, under Section 38(3) of the Environmental Protection Act 1986 (DEC Ref: A310744). Submission (2010d) raised the concern that the Chief Executive Officer (CEO) of DEC should not make a decision on the current proposal until the EPA's assessment of the Browse LNG Precinct has concluded. DEC's CEO is not constrained from making a decision on the current proposal, as the Browse LNG Precinct is being assessed as a Strategic Environmental Assessment.

WEL (2010b) provided the following supporting information for the selection of the southern site at James Price Point for facilities associated with the geotechnical and hydrological investigation:

- Short inshore pavement shelf, good access to deep water and a potential natural 'channel' in the offshore rocky reef offered significant advantages over a northern location in terms of potential impacts from marine construction activities and dredging.
- The northern location would also require significantly more drill and blast operations to construct the required marine facilities causing a substantially greater threat to seagrass beds in the James Price Point area providing a food source for the EPBC listed turtles and dugongs in the area.
- The Department of State Development and WEL also worked closely with Traditional Owners to ensure heritage values were considered in the final area selected.

Five submissions were received in objection to this application. Concerns were raised in relation to:

- The close proximity of the applied areas to the vine thicket TEC and the adequacy of the proposed 50m buffer (Submission, 2010a; Submission, 2010c; Submission, 2010d; Submission, 2010e). A request was made that this buffer distance be justified by the proponent (Submission, 2010d). TECs are under represented in the Kimberley region and a site visit should be undertaken to determine the location of the vine thickets within the applied area, buffer distances should be maintained and occurrences fenced from site operations to minimise impact (Submission, 2010e). These points are addressed in Principles (a) and (d) of this assessment.

- The unconfirmed presence of a number of state or commonwealth listed endangered fauna species at this

location (Submission, 2010c) this is addressed in Principles (a) and (b), however it is not clear exactly which species this submission is in reference to.

- It was noted that the documentation provided was insufficient to make comment on various environmental considerations (Submission, 2010d).

- The proposal is for investigation purposes and the site should be restored to its original condition, should the site activities not be approved (Submission, 2010e). The proponent has advised that all cleared areas will be rehabilitated and landscaped in the event the proposed Browse LNG Precinct does not proceed (WEL, 2010a).

- Submission (2010e) also made points in relation to the importance of machinery hygiene to minimise disturbance to the TEC due to weed invasion, this is addressed in Principle (a).

- There is a need for strategic planning and undertaking of clearing to limit the cleared land left exposed and vulnerable to prevent erosion and dust problems (Submission, 2010e), which is addressed in Principle (g).

- The Song Cycle body of traditional knowledge traverses the James Price Point area and wherever in the 750ha application area clearing occurs, it is highly likely that some of this clearing will impact on the Song Cycle (Submission, 2010b). A Heritage Protection Agreement (HPA) exists between the proponent, the Minister for State Development and the Kimberley Land Council (KLC) in respect of the Browse LNG Precinct. Submission (2010d) raised the concern that seeking to undertake ground disturbing works other than in accordance with the procedures set out in the HPA is inconsistent with the provisions of the HPA. The proponent advised that it consults with the KLC and Traditional Owners prior to undertaking studies/surveys in the Browse LNG Precinct area and that the conduct of work is subject to cultural directions (WEL, 2010a; DEC Ref: A316455). The proponent will be advised to contact the KLC and Goolarabooloo Jabirr Jabirr native title claimants, prior to the commencement of clearing activities, to discuss their obligations under the Aboriginal Heritage Act 1972. The Western Australian Government, the KLC (on behalf of Traditional Owners) and Woodside Energy Limited (WEL) have entered into a Heritage Protection Agreement (HPA) for the Browse LNG Precinct. In relation to the activities proposed to be undertaken in relation to the application to clear WEL has informally raised this with KLC and the Traditional Owners. WEL formally notified the KLC on 29 July 2010 as details regarding the specifics of the activities were only recently defined to a sufficient level of detail for the HPA (WEL, 2010b).

A concern was raised that the granting of this clearing permit will inhibit the principles or objective of the Shire of Broome's Biodiversity Policy (Submission, 2010d). This concern was not raised by the Shire of Broome in the comments it provided on this proposal (Submission, 2010e). The proponent advised that it will consult with the Shire of Broome on an ongoing basis throughout the development of the Browse LNG early works program in relation to the native vegetation clearing permit, other early works for the Browse LNG Precinct and any future development that may occur (SKM, 2010).

Submission (2010a) expressed opposition to the development of the proposed future Browse LNG Precinct, which the current proposal is designed to conduct onsite investigations for. The proposed Browse LNG Precinct project is under Strategic Environmental Assessment by the Environmental Protection Authority (EPA). An environmental review document is being prepared for public comment. For information on this proposal the Office of the Environmental Protection Authority can be contacted.

The proposal is located within the Canning-Kimberley groundwater area proclaimed under the Rights in Water and Irrigation Act 1914 (RIWI Act). The abstraction of ground water in this area is subject to licensing by the Department of Water (DoW) and licences, if granted, may contain conditions on the sustainable use of water (DoW, 2010). Under Section 26D of the RIWI Act, the alteration of an existing bore and / or the construction of a new bore is required to be licensed (DoW, 2010).

Methodology

References:

DoW, 2010

SKM, 2010

Submission, 2010a

Submission, 2010b

Submission, 2010c

Submission, 2010d

Submission, 2010e

WEL, 2010a

WEL, 2010b

GIS Databases:

- Aboriginal Sites of Significance - DIA 02/10

- Cadastre - Landgate 12/09

- Country Area Water Supply Act (Part IIA) Clearing Control Catchments - DoW 29/06/06

- Environmental Impact Assessments - EPA 08/03/05

- Native Title Claims - LA 02/5/07

- Public Drinking Water Source Areas (PDWSAs) - DoW 07/02/06

- RIWI Act, Areas - DoW 05/04/02

- RIWI Act, Groundwater Areas - DoW 13/07/06

4. References

- Aecom (2010a) Supplementary Terrestrial Flora and Vegetation Assessment - James Price Point, WA. Prepared for Department of State Development, WA. March, 2010.
- Aecom (2010b) Supplementary Terrestrial Fauna and Habitat Assessment - James Price Point, WA. Prepared for Department of State Development, WA. March, 2010.
- Biota (2009a) A Vegetation and Flora Survey of James Price Point: Wet Season 2009. Prepared for Department of State Development, WA. December, 2009.
- Biota (2009b) James Price Point Terrestrial Fauna Survey: Wet Season 2009. Prepared for Department of State Development, WA. December, 2009.
- DEC (2009) A synthesis of scientific knowledge to support conservation management in the Kimberley region of Western Australia. Department of Environment and Conservation, Western Australia.
- DEC (2010) Comments on James Price Point clearing application. Species and Communities Branch, Department of Environment and Conservation, Western Australia. DEC Ref: A322068, A320674, A313489
- DoW (2010) Rights in Water and Irrigation Act Advice - Canning-Kimberley Groundwater Area. Department of Water Kimberley Region. DEC Ref: A315804.
- KDC (2010) Soils of the Kimberley. Available from http://www.kdc.wa.gov.au/kimberley/tk_soils.asp Accessed 7 July 2010. Kimberley Development Commission, Government of Western Australia.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Shepherd, D.P. (2007) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- SKM (2010) Supporting information. Sinclair Knight Merz. DEC Ref: A316455
- Submission (2010a) Public submission. 28 June 2010. DEC Ref: A313162
- Submission (2010b) Public submission. 28 June 2010. DEC Ref: A313335
- Submission (2010c) Public submission. 25 June 2010. DEC Ref: A313189
- Submission (2010d) Kimberley Land Council. 2 July 2010. DEC Ref: A314483
- Submission (2010e) Shire of Broome. 12 July 2010. DEC Ref: A316534
- Trudgen, M.E. (1988). A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished report prepared for Bowman Bishaw and Associates, West Perth.
- WEL (2010a) Clearing permit application - supporting information. Woodside Energy Limited. DEC Ref: A305905
- WEL (2010b) Supporting Information. Woodside Energy Limited. DEC Ref: A321653

5. Glossary

Term	Meaning
CALM	Department of Conservation and Land Management (now DEC)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DoE	Department of Environment (now DEC)
DoW	Department of Water
DMP	Department of Mines and Petroleum (ex DoIR)
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)