



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 5899/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Warrego Energy Pty Ltd

### 1.3. Property details

Property: Petroleum Exploration Permit 469  
Local Government Area: Shire of Mingenew and Shire of Three Springs  
Colloquial name: West Erregulla Exploration Program

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
70		Mechanical Removal	Seismic Survey and Appraisal Well

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 30 January 2014

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

**Vegetation Description** Beard vegetation associations have been mapped for the whole of Western Australia. Two Beard vegetation associations are located within the application area (GIS Database):

**Beard vegetation association 49:** Shrublands; mixed heath; and  
**Beard vegetation association 379:** Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region (Government of Western Australia, 2013; GIS Database).

A Level 2 flora and vegetation survey was conducted over the application area by Woodman Environmental Consulting (Woodman) (2013). The survey included an initial reconnaissance visit (15 September 2011), a detailed survey over spring in 2011 (26 to 30 September, 24 to 27 October and 20 to 26 November) and another detailed survey over spring in 2012 (10 to 13 September and 2 to 5 October) which identified 14 vegetation types (VT) within the application area:

**VT 1a:** Mid open forest of *Eucalyptus accedens* over mid open shrubland dominated by *Gastrolobium spinosum*, *Olearia rudis* and *Anthocercis genistoides* over low open forbland and rushland dominated by *Calandrinia calytrata*, *Calandrinia corrigioloides*, *Millotia myosotidifolia*, *Trachymene pilosa* and *Conostylis aculeata* subsp. *breviflora* on grey sand on mid slopes;

**VT 1b:** Mid open forest of *Eucalyptus accedens* over low open shrubland dominated by *Gastrolobium plicatum* and *Dodonaea divaricata* over low open forbland of mixed species including *Goodenia berardiana*, *Rhodanthe manglesii*, *Podolepis lessonii* and *Acanthocarpus canaliculatus* on grey-brown sandy or clay loams on mid-upper slopes;

**VT 2:** Mid open forest of *Eucalyptus accedens* or low open forest *E. loxophleba* subsp. *loxophleba* over mid open shrubland dominated by *Rhagodia preissii* subsp. *preissii* and *Melaleuca acutifolia* on greybrown sandy loams on flats and slopes;

**VT 3:** Occasional mid woodland of *Eucalyptus accedens* over mid shrubland dominated by *Melaleuca concreta*, *M. marginata* and *M. acutifolia* over low isolated mixed shrubs and sedges including *Acacia ericksoniae* and *Lepidosperma* sp. A2 Inland Flat (G.J. Keighery 7000) on pink-brown or white clay loams on flats;

**VT 4:** Tall closed to open shrubland dominated by *Allocasuarina campestris* or occasionally *Acacia neurophylla* subsp. *neurophylla* over mid open shrubland and sedgeland of mixed species including *Grevillea biternata*, *Melaleuca radula*, *Melaleuca concreta*, *Thryptomene* sp. Mingenew (Diels & Pritzel 332) (P3), *Ecdeiocola monostachya* and *Thryptomene racemulosa* on grey-brown sand, sandy loam or clay loam, occasionally with granitic pebbles, on slopes and flats adjacent to seasonal creeks;

**VT 5:** Tall closed shrubland to shrubland dominated by *Allocasuarina campestris* with occasional *Acacia aciphylla*, *Acacia neurophylla* subsp. *neurophylla* and *Melaleuca viminea* subsp. *viminea* over sparse low shrubland and sedgeland of mixed species including *Ecdeiocola monostachya* and *Thryptomene racemulosa* over open forbland and grassland of mixed introduced species including *Ehrharta longiflora* and *Ursinia anthemoides* on grey or brown sandy or clay loams within and on the banks of seasonal creeks;

**VT 6:** Open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over mid closed shrubland dominated by *Melaleuca marginata* over sparse forbland of mixed species including *Rhodanthe polycephala* on greybrown clay on slopes above seasonal creeks;

**VT 7a:** Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species frequently dominated by *Ecdeiocolea monostachya* and *Melaleuca aspalathoides*, or occasionally *M. tinkerii*, *Hakea auriculata* or *Hakea lissocarpha*, on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests;

**VT 7b:** Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* or mid open shrubland of *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Banksia carlinoides*, *Ecdeiocolea monostachya*, *Hakea incrassata*, *Hibbertia hypericoides* and *Melaleuca aspalathoides* on gravelly grey or brown clay loams or sands, usually with laterite on or near the surface, on slopes and crests;

**VT 8:** Mid mallee woodland to isolated mallees of *Eucalyptus conveniens* over mid shrubland to open shrubland dominated by *Allocasuarina campestris* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Hakea auriculata*, *Melaleuca radula*, *M. aspalathoides* and *Banksia fraseri* var. *fraseri* on gravelly grey or brown clay loams usually over massive laterite on breakaway tops, ridges and lateritic rises;

**VT 9:** Mid to low open shrubland of *Allocasuarina campestris*, *Melaleuca concreta* and *Melaleuca marginata* over low shrubland dominated by *Melaleuca tinkerii* and occasionally *Gastrolobium plicatum* over low shrubland and forbland dominated by *Stylidium torticarum* (P3), *Leucopogon* sp. Yandanooka (M. Hislop 2507) and *Micromyrtus rogeri* (P1) on gravelly pink-brown or white-grey clay or clay loam over decaying laterite on breakaway tops and slopes;

**VT 10:** Mid sparse to open shrubland of mixed species including *Calothamnus quadrifidus* subsp. *angustifolius*, *Grevillea biformis* subsp. *biformis* and *Banksia attenuata* over low shrubland and sedgeland of mixed species dominated by *Ecdeiocolea monostachya*, *Melaleuca leuropoma*, *Daviesia divaricata* subsp. *divaricata* ms, *Mesomelaena pseudostygia* and *Banksia shuttleworthiana* on yellow-brown or occasionally grey sand on slopes and valley floors;

**VT 11:** Mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Hakea circumalata*, *Lepidobolus preissianus* subsp. *preissianus*, *Mesomelaena pseudostygia* and *M. stygia* subsp. *deflexa* (P3) on yellow or yellow-brown sand or sandy loam on mid to upper slopes;

**VT 12:** Occasional mid sparse to open shrubland of *Allocasuarina campestris* and *Grevillea biformis* subsp. *biformis* over low shrubland and sedgeland dominated by *Beaufortia elegans*, *Hibbertia hypericoides* and *Ecdeiocolea monostachya* on grey or brown sand or sandy loam on mid to upper slopes;

**VT 13a:** Low open woodland of *Eucalyptus tottiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Banksia scabrella* (P4), *Calothamnus sanguineus*, *Eremaea beaufortioides* var. *microphylla*, *Melaleuca* aff. *leuropoma* and *Hibbertia hypericoides* over low shrubland and sedgeland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis canterriata*, *Mesomelaena pseudostygia* and *Caustis dioica* on grey or brown sand on lower and mid slopes;

**VT 13b:** Low open woodland of *Eucalyptus tottiana* over mid to low shrubland of mixed species dominated by *Allocasuarina humilis*, *Calothamnus sanguineus*, *Hakea trifurcata*, *Hibbertia hypericoides* and *Melaleuca leuropoma* over low shrubland and rushland of mixed species including *Banksia dallanneyi* subsp. *media*, *Conostylis aculeata* subsp. *breviflora* and *Conostylis canterriata* on grey, brown or yellow sand on flats, in depressions and on slopes; and

**VT 14:** Low open shrubland dominated by *Calothamnus quadrifidus* subsp. *angustifolius*, *Banksia carlinoides*, *Hakea lissocarpha* and *Verticordia densiflora* over low open shrubland, sedgeland and forbland dominated by *Dampiera teres* (broad-leaf variant), *Jacksonia angulata*, *Harperia lateriflora*, *Opercularia vaginata* and *Melaleuca trichophylla* on greybrown sands, sandy loams and clay loams in minor drainage lines and on flats.

#### **C: Cleared Land**

Areas where no native vegetation was present due to human disturbance (predominantly paddocks) were mapped as 'Cleared Land'. A total of 3099.26 hectares of Cleared Land was mapped in the application area.

<b>Clearing Description</b>	West Erregulla Exploration Program. Warrego Energy Pty Ltd proposes to clear up to 70 hectares of native vegetation within a total boundary of approximately 8,575 hectares for the purpose of a seismic survey and appraisal well. The project is located approximately 41 kilometres south of Dongara, in the Shire of Mingenew and Three Springs.
<b>Vegetation Condition</b>	Pristine: No obvious signs of disturbance (Keighery, 1994);  To:  Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).
<b>Comment</b>	The vegetation condition was assessed during a survey undertaken by Woodman (2013).

### **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**

The application area occurs within the Leseuer Sandplain subregion of the Geraldton Sandplains Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion contains shrub-

heaths rich in endemics occurring on a mosaic of lateritic mesas, sandplains, coastal sands and limestones (CALM, 2002). The subregion exhibits extremely high floristic endemism and is also regarded as having particularly high floristic diversity (CALM, 2002).

A Level 2 flora and vegetation survey was conducted over the application area by Woodman Environmental Consulting (Woodman) (2013). The survey included an initial reconnaissance visit (15 September 2011), a detailed survey over spring in 2011 (26 to 30 September, 24 to 27 October and 20 to 26 November) and another detailed survey over spring in 2012 (10 to 13 September and 2 to 5 October). Woodman (2013) described and mapped 17 vegetation types across the application area, where the vast majority of the vegetation types (excluding vegetation types 13b and 14) are considered to be of high local significance. A total of 3,099 hectares of cleared land was mapped by Woodman (2013) representing approximately 32.5% of the application area. Remnant vegetation within private property varied in condition from 'pristine' to 'degraded' (Keighery, 1994). Areas ranked 'good' to 'degraded' were generally associated with Sand Plain Creek where pressure from grazing and weeds were greatest (Woodman, 2013). The majority of native vegetation located within Vacant Crown Land was considered to be in 'pristine' condition (Keighery, 1994).

The flora and vegetation survey identified 535 vascular flora taxa representing 64 families and 196 genera which include three Threatened Flora species, five Priority 1 Flora species, four Priority 2 Flora species, 16 Priority 3 Flora species and three Priority 4 Flora species (Woodman, 2013). Warrego Energy Pty Ltd has committed to avoiding Threatened Flora and Priority 1 Flora species where possible (Warrego, 2013). Potential impacts to Threatened and Priority Flora as a result of the proposed clearing may be minimised by the implementation of a flora management condition.

From the four Priority 2 Flora species identified within the application area, only one species is likely to be impacted by the proposed clearing (Woodman, 2013); *Persoonia filiformis*. There were 88 locations surveyed of this species within the application area totalling 190 individuals. Based on the current disturbance footprint, four locations are likely to be impacted which represents 4.5% of the total individuals surveyed. The proposed clearing unlikely to have a significant impact on the conservation status of this species.

From the 16 Priority 3 Flora species identified within the application area, the following species are likely to be impacted by the proposed clearing (Woodman, 2013):

- *Mesomelaena stygia* subsp. *deflexa*: There were 514 locations surveyed within the application area totalling 21,527 individuals. Based on the current disturbance footprint, 1 location is likely to be impacted which represents 0.7% of the total individuals surveyed. The proposed clearing is unlikely to have a significant impact on the conservation status of this species;
- *Synaphea aephyrsa*: There were 157 locations surveyed within the application area totalling 1780 individuals. Based on the current disturbance footprint, 1 location is likely to be impacted which represents 0.7% of the total individuals surveyed. The proposed clearing is unlikely to have a significant impact on the conservation status of this species; and
- *Stylidium drummondianum*: There were 433 locations surveyed within the application area totalling 9,294 individuals. Based on the current disturbance footprint, 13 locations are likely to be impacted, representing 3% of the total individuals surveyed. The proposed clearing is unlikely to have a significant impact on the conservation status of this species.

From the three Priority 4 Flora species identified within the application area, the following species are likely to be impacted by the proposed clearing (Woodman, 2013):

- *Banksia scabrella*: There were 463 locations surveyed within the application area totalling 7,668 individuals. Based on the current disturbance footprint, 8 locations are likely to be impacted, representing 1.7% of the total individuals surveyed. The proposed clearing is unlikely to have a significant impact on the conservation status of this species; and
- *Eucalyptus macrocarpa* subsp. *elachantha*: There were 121 locations surveyed within the application area totalling 1,310 individuals. Based on the current disturbance footprint, 1 location is likely to be impacted, representing 0.8% of the total individuals surveyed. The proposed clearing is unlikely to have a significant impact on the conservation status of this species.

The level of biodiversity of the application area is very high given the relatively small size and low diversity of habitats within the application area when compared to other surveys within the region (Woodman, 2013) and when compared to available regional biodiversity data (Warrego, 2013).

No Priority Ecological Communities or Threatened Ecological Communities were recorded within the application area (GIS Database; Coffey, 2013).

There were six fauna habitat types recorded within the application by Coffey (2013). A total of 302 vertebrate fauna species, 20 of which are conservation significant, have previously been recorded within the region and so have the potential to occur within the application area (Coffey, 2013; Warrego, 2013). The majority of the faunal habitats contained habitat critical to the survival of the Carnaby's Black Cockatoo (Warrego, 2013). The remnant vegetation within the application area has the potential to comprise of high faunal diversity.

Woodman (2013) recorded 22 weed species within the application area. None of these weeds are listed as Weeds of National Significance, although *Echium plantagineum* (Pattersons Curse), is a declared pest under the *Biosecurity and Agricultural Act 2007*, however not for the shires within which the application area occurs. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Glevan Consulting (2012) conducted an assessment of the application area for the presence of *Phytophthora Dieback*. No areas of remnant vegetation within the Vacant Crown Land were observed to be currently impacted or infected by *Phytophthora Dieback*. Areas of remnant vegetation within agricultural land were not examined, as they were un-mappable by Glevan Consulting (2012).

Based on the above, the proposed clearing is at variance to this Principle.

**Methodology** CALM (2002)  
Coffey (2013)  
Glevan Consulting (2012)  
Keighery (1994)  
Warrego (2013)  
Woodman (2013)  
GIS Database:  
- IBRA WA (Regions - Subregions)  
- Mingenew 1.4m Orthomosaic - Landgate 2001  
- Threatened Ecological Sites Buffered

**(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 at variance to this Principle**

Coffey Environments Australia (Coffey) (2013) undertook a level 1 fauna survey over the application area between 6 to 9 June 2012 and 3 to 4 December 2012. Six fauna habitat types were identified and mapped within the application area;

1. Mixed shrubland with/without woodland species – Mixed shrubland with or without low open woodlands, on flats, in depressions and on slopes. Species comprising this habitat include *Eucalyptus todtiana*, *E. conveniens*, *Allocasuarina humilis*, *A. campestris*, *Banksia scabrella*, *Calothamnus sanguineus*, *B. dallanneyi*, *B. attenuata*, *Conostylis canterinata*, *Hakea trifurcate*, *H. circumalata*, *Grevillea biflora* and *Melaleuca leuropoma*;
2. Laterite breakaway – Contains a mixture of shrubland with/without open mallee woodland on clear rises or ridges in the landscape;
3. Open Eucalypt forest – Occurs as patches throughout the application area with *Eucalyptus accedens* the dominant species;
4. Minor drainage lines – Open shrubland in minor drainage lines and flats;
5. Planted Eucalypt habitats – Isolated trees planted along roadside; and
6. Cleared land – Agricultural land either crops or pasture.

The application area is considered to have high ecological functional value, given a large portion of habitat within the application area was of 'very good' condition (Keighery, 1994) and the presence of suitable foraging and roosting habitat for Carnaby's Black Cockatoo (Coffey, 2013).

There are eight species of conservation significance listed as either threatened species under the *Environment Protection and Biodiversity Conservation Act (EPBC) 1999* or protected under Western Australian legislation (*Wildlife Conservation Act 1950*), which may potentially occur within a 20 kilometre radius of the application area (DPAW, 2014). Based on habitat mapping, Coffey (2013) identified the following conservation significant fauna species as potentially occurring within the application area;

- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) (Schedule 1 – WC Act; Endangered – EPBC Act);
- Gilled Slender Blue Tongue (*Cyclodomorphus branchialis*) (Schedule 1 – WC Act);
- Rainbow Bee-eater (*Merops ornatus*) (Schedule 3 – WC Act) (Migratory – EPBC Act);
- Peregrine Falcon (*Falco peregrinus*) (Schedule 4 – WC Act);
- Western Carpet Python (*Morelia spiltoa imbricata*) (Schedule 4 – WC Act; Priority 4 – DEC); and
- Australian Bustard (*Ardeotis australis*) (Priority 4 – DEC).

The Carnaby's Cockatoo is listed as endangered under the EPBC Act, with populations declining dramatically due to land clearing for agriculture in regional areas and for urban development (Shah, 2006). The application area has particular importance in the suitability of the vegetation to provide foraging habitat for Carnaby's

Cockatoo (Coffey; 2013; Woodman; 2013). The application area is recognised as providing habitat critical to the survival of the Black Cockatoo (DEC, 2012), including;

- Foraging habitat: shrubland with/without woodland species, laterite breakaways and minor drainage habitats; and
- Roosting habitat: open *Eucalyptus* forest and planted *Eucalyptus* habitats (planted roadside/property trees).

The vegetation within the application area comprises of various *Banksia*, *Eucalyptus* and *Hakea* species which are considered important feed sources for Carnaby's Black Cockatoo (DoE, 2014a). All the vegetation types (except VT 1b, 3 and 5) within the application area include several feeding species identified for the Carnaby's Cockatoo (Coffey, 2013).

Advice from the Department of Parks and Wildlife (DPaW) (2013) state that a large portion of the habitat within the application area is in very good quality with the presence of suitable Carnaby's Cockatoo foraging habitat (several feeding species identified) and roosting habitat. DPaW (2013) advise that the application area contains habitat that is considered significant to this species on a local scale. The proposed clearing will have an adverse effect on habitat that is considered important to Carnaby's, however DPaW supports that the impacts will be of limited significance in terms of the overall extent of Carnaby's feeding habitat across its range of occupancy. However, feeding habitat within the range of Carnaby's is under significant pressure and as such the cumulative effect of individual proposals need to be considered as, the progressive loss of small areas is an on-going concern for this species (DPaW, 2013; DoE, 2014a). The loss of 70 hectares of high quality Carnaby's Cockatoo feeding habitat and potential roosting habitat will impact the species, as these vegetation types would be significant for this species especially as the clearing will target certain vegetation associations which may provide food sources for this species at specific times of the year (DoE, 2014a; Woodman, 2013). The potential impact to Carnaby's Cockatoo habitats may be mitigated by the implementation of an offset condition and potential impacts to Carnaby's Black Cockatoo habitat trees as a result of the proposed clearing may be minimised by the implementation of a fauna management condition.

The Rainbow Bee Eater (*Merops ornatus*) is migratory species which is highly mobile and may use the study area for foraging as part of a larger territory area (DoE, 2014). Given that the proposed clearing will occur during the end of February/beginning of March, the Rainbow Bee-eater would have left the area for its northerly migration (DoE, 2014b).

The Australian Bustard may use the application area for foraging as part of a larger territory area and are considered highly mobile and have a wide distribution. The amount of birds present at one time would be small and insignificant as they rarely congregate in colonies. It is unlikely there will be a significant impact on the conservation status of the Australian Bustard from the proposed clearing (Coffey, 2013).

The Carpet Python has been recorded from areas of sandy shrub and scrub habitats near Geraldton (Coffey, 2013). Although no records have been identified within the application area, the proposed clearing is still likely to result in some loss of habitat for this species, but unlikely to have a significant impact on their conservation status.

The Peregrine Falcon inhabits areas near cliffs along coastlines or rivers and near ranges or wooded watercourses (Coffey, 2013). This species has been recorded near Geraldton and near Arrowsmith, within 20 kilometres of the application area. As this species is nomadic, it may utilise the application area intermittently (Coffey, 2013). However, it is considered that this species may use the application area for foraging as part of a larger territory area and are considered highly mobile and have a wide distribution. The proposed clearing is unlikely to have a significant impact on their conservation status.

The Gilled Slender Blue Tongue has a restricted distribution in semi-arid shrublands and is found in association with heavy red soils (Wilson & Swan, 2010). This species was recorded nearby at the southern Beekeepers Reserve, between Jurien and Green Head and from Koolanooka (Coffey, 2013). The Gilled Slender Blue Tongue is considered likely to utilise the habitat within the application area, however the linear spaced nature of the proposed clearing is unlikely to have a significant impact on their conservation status.

Based on the above, the proposed clearing is at variance to this Principle.

**Methodology** Coffey (2013)  
DEC (2012)  
DoE (2014a)  
DoE (2014b)  
DPaW (2013)  
Keighery (1994)  
Shah (2006)  
Woodman (2013)  
Wilson & Swan (2010)

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

**Comments Proposal is at variance to this Principle**

A level 2 flora and vegetation survey by Woodman (2013) identified three Threatened Flora species within the application area; *Eucalyptus crispata*, *Paracaleana dixonii* and *Thelymitra stellata*.

Woodman (2013) identified 18 individuals of *Eucalyptus crispata* across three locations. This flora species was recorded solely within vegetation type 8, with approximately 448.3 hectares of habitat for *E. crispata* present within the application area (Woodman, 2013). Warrego (2013) advise that this flora species can be avoided throughout the application area. Potential impacts to Threatened Flora as a result of the proposed clearing may be minimised by the implementation of a flora management condition.

Woodman (2013) identified 263 individuals of *Paracaleana dixonii* which were recorded at 174 locations, representing a total of 30 subpopulations. The record of this species within the application area represents the northernmost known collection of the species, extending its known range by approximately 10 kilometres (Woodman, 2013). This species was predominantly recorded within vegetation type 13a (70 locations). Approximately 4,438 hectares of habitat for *Paracaleana dixonii* is present within the application area. Warrego Energy Pty Ltd have applied for a 'Permit to Take Declared Rare Flora' from the Department of Parks and Wildlife as some of the individuals of this species cannot be avoided

A total of 266 individuals of *Thelymitra stellata* were recorded at 139 locations, representing a total of 19 subpopulations (Woodman, 2013). A further seven individuals, over five locations and representing another two subpopulations, may also represent this species. However, Woodman (2013) could only identify the specimens to *Thelymitra ?stellata* due to the absence of flowering material. The record of this species within the application area represents the northernmost known collection of the species, extending its known range by approximately 10 kilometres (Woodman, 2013). This species was predominately recorded within vegetation type 8, with 129 of the 139 confirmed locations and one of the five potential locations recorded occurring within this vegetation type. Approximately 4,195 hectares of habitat for *Thelymitra stellata* is present within the application area. Warrego Energy Pty Ltd have applied for a 'Permit to Take Declared Rare Flora' from the Department of Parks and Wildlife as some of the individuals of this species cannot be avoided.

Warrego (2013) have stated that all vegetation clearing will be undertaken outside the growth periods for both *Thelymitra stellata* and *Paracaleana dixonii* (i.e. May to December). As both of these species are present as tubers underground outside their growth periods, impacts from clearing (using a raised roller mulching technique) will be minimised (Warrego, 2013).

Based on the above, the proposed clearing is at variance to this Principle.

**Methodology** Warrego (2013)  
Woodman (2013)

**(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**

The nearest TEC to the application area are the TEC 'Assemblages of organic mound springs of the Three Springs area (Endangered) and the TEC 'Ferricrete floristic community (Rocky Springs type) (Vulnerable), located approximately 10 kilometres east of the application area (Warrego, 2013).

Given the distance separating the TEC buffer zone and the application area, the proposed clearing is not likely to impact the TEC.

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

**Methodology** Warrego (2013)  
GIS Database:  
- Threatened Ecological Sites Buffered

**(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 at variance to this Principle**

The application area falls within the Lesueur Sandplain subregion of the Geraldton Sandplains Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). Approximately 45% of the pre-European vegetation remains within the bioregion (Government of Western Australia, 2013). The vegetation within the application area is recorded as:

**Beard vegetation association 49:** Shrublands; mixed heath; and

**Beard vegetation association 379:** Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region (Government of Western Australia, 2013; GIS Database).

Beard vegetation association 379 retains approximately 23.82% of its pre-European extent which is less than the 30% threshold level recommended in the National Objectives Targets for Biodiversity Conservation below which, species loss appears to accelerate exponentially at an ecosystem level (EPA, 2000).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves (and post clearing %)
IBRA Bioregion - Geraldton Sandplains	3,136,038	1,408,729	~44.92	Depleted	15.34 (34.14)
IBRA Subregion - Lesueur Sandplain	1,171,775	504,203	~43.03	Depleted	17.78 (41.31)
Local Government – Three Springs	265,741	59,191	~22.27	Vulnerable	1.85 (8.29)
Local Government - Mingenew	193,480	21,771	~11.25	Vulnerable	0.86 (7.60)
<b>Beard vegetation associations - State</b>					
49	52,492	26,134	~49.79	Depleted	20.46 (40.74)
379	547,737	130,482	~23.82	Vulnerable	5.21 (21.50)
<b>Beard vegetation associations - Bioregion</b>					
49	39,718	14,447	~36.37	Depleted	8.04 (22.10)
379	546,507	130,245	~23.83	Vulnerable	5.13 (21.53)
<b>Beard vegetation associations - subregion</b>					
49	33,139	13,562	~40.92	Depleted	9.63 (23.54)
379	370,030	112,061	~30.28	Depleted/ Vulnerable	5.58 (18.42)

\* Government of Western Australia (2013)

\*\* Department of Natural Resources and Environment (2002)

Whilst it is acknowledged that Beard vegetation association 49 is above recognised thresholds (Government of Western Australia, 2013), assessment of aerial imagery confirms that the local area has been largely cleared for horticultural and plantation purposes (GIS Database). The vegetation under application forms part of a significant area of remnant native vegetation. Based on current conceptual disturbance footprint, the proposed clearing will impact 9.3 hectares of Beard vegetation association 49 and 82.4 hectares of Beard vegetation association 379. This clearing will reduce the pre-European extent of Beard vegetation association 49 by 0.02% and Beard vegetation association by 379 by 0.01% (Warrego, 2013).

Based on the above, the proposed clearing is at variance to this Principle.

**Methodology** Department of Natural Resources and Environment (2002)  
EPA (2000)  
Government of Western Australia (2013)  
Warrego (2013)  
GIS Database:  
- IBRA WA (regions - subregions)  
- Pre-European Vegetation

**(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 may be at variance to this Principle**

Habitat mapping and vegetation type mapping undertaken by Coffey (2013) and Woodman (2013) identified some major drainage lines and depressions (i.e. minor drainage line habitat and vegetation types 5 and 14) in the application area. The most significant drainage system within the application area is Sand Plain Creek, which passes through agricultural land in the north of the project area. Woodman (2013) ranked remnant vegetation surrounding the Sand Plain Creek as 'very good' to 'good' condition (Keighery, 1994), due to the decline of native species diversity associated with clearing, impacts from grazing stock and increased weed loading. The other areas of minor drainage are within the Vacant Crown Land and are in 'pristine' to 'excellent' condition (Keighery, 1994; Woodman, 2013).

Warrego Energy Pty Ltd has committed to avoid clearing along Sand Plain Creek and utilising existing crossings to minimise disturbance (Warrego, 2013). Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition.

Based on the above, the proposed clearing may be at variance to this Principle.

**Methodology** Coffey (2013)  
Keighery (1994)  
Warrego (2013)  
Woodman (2013)  
GIS Database:  
- Hydrography, linear

**(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 proponent has applied to clear up to 70 hectares within an application area of approximately 8,575 hectares for the purpose of a seismic survey and appraisal well. The scale of clearing (approximately 0.8 percent of the application area) and the nature of the proposed clearing (width of clearing of access tracks, coarse linear line spacing and raised roller mulching method) are not likely to result in large areas of disturbed or open land (Warrego, 2013). The proponent has also committed to avoiding habitat trees and clearing along Sand Plain Creek, within open Eucalyptus forest habitat and planted Eucalyptus habitat (Warrego, 2013).

Given the nature and scale of the proposed activities, the clearing is not likely to result in appreciable land degradation.

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

**Methodology** Warrego (2013)

**(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 application area is not located within any conservation areas (GIS Database). The nearest conservation area is the Yardanogo Nature Reserve, located approximately 16 kilometres west of the application area (GIS Database). Given the distance separating the proposed Yardanogo Nature Reserve and the application area, the proposed clearing is not likely to impact the environmental values of the conservation area.

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

**Methodology** GIS Database:  
- DEC Tenure

**(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 application area is not located within a Public Drinking Water Source Area (GIS Database). The application area is located within the proclaimed Arrowsmith groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purposes other than domestic and/or stock watering is subject to licence by the Department of Water.

The proponent has committed to utilising existing areas of disturbance where possible and avoiding vegetation along the Sand Plain Creek (Warrego, 2013). Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition.



The application area has a groundwater salinity that is fresh to brackish (500 – 1,000 milligrams/Litre Total Dissolved solids (TDS)) (GIS Database). With high annual evaporation rates and low annual rainfall, there is little recharge into regional groundwater (BoM, 2014). The proposed clearing of 70 hectares of native vegetation is unlikely to further deteriorate the quality of underground water (GIS Database).

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

**Methodology** BoM (2014)  
Warrego (2013)  
GIS Database:  
- Geodata, Lakes  
- Groundwater Salinity, Statewide  
- Hydrography, Linear  
- Public Drinking Water Source Areas  
- RIWI Act, Groundwater Areas

**(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 application area experiences a Mediterranean climate, with an annual average rainfall of approximately 400.8 millimetres per year (CALM, 2002; BoM, 2014). Based on an average annual evaporation rate of 2,400 - 2,800 millimetres (BoM, 2013), any surface water resulting from rainfall events is likely to be relatively short lived.

Given the size of the area to be cleared (70 hectares) compared to the size of the Irwin catchment area (607,252 hectares) and Arrowsmith catchment area (160,418 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

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

**Methodology** BoM (2014)  
CALM (2002)  
GIS Database:  
- Hydrographic Catchments - Catchments  
- Hydrography, Linear

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

**Comments**

There are two Native Title claims over the area under application (GIS Database). The claim WC1997/072 was registered with the National Native Title Tribunal on 12 December 2011. The claim WC2004/002 was registered with the National Native Title Tribunal on 2 March 2005. The mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

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

It is the proponent's responsibility to liaise with the Department of Environment Regulation (formerly the Department of Environment and Conservation) and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 2 December 2013 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received objecting to the proposed clearing.

It is noted that the proposed clearing may impact on a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Environment for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of Environment for further information regarding notification and referral responsibilities under the EPBC Act.

**Methodology** GIS Database:  
- Aboriginal Sites of Significance  
- Native Title Claims - Registered with the NNTT  
- Native Title Claims - Filed at the Federal Court

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#### 5. Glossary

##### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>CALM</b>	Department of Conservation and Land Management (now DEC), Western Australia
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia
<b>DEC</b>	Department of Environment and Conservation, Western Australia
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DEC), Western Australia
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia
<b>DMP</b>	Department of Mines and Petroleum, Western Australia
<b>DoE</b>	Department of Environment (now DEC), Western Australia
<b>DoIR</b>	Department of Industry and Resources (now DMP), Western Australia
<b>DOLA</b>	Department of Land Administration, Western Australia
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environmental Protection Act 1986, Western Australia
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
<b>GIS</b>	Geographical Information System
<b>ha</b>	Hectare (10,000 square metres)
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>RIWI Act</b>	Rights in Water and Irrigation Act 1914, Western Australia
<b>s.17</b>	Section 17 of the Environment Protection Act 1986, Western Australia
<b>TEC</b>	Threatened Ecological Community

##### 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.