



1. Application details

1.1. Permit application details

Permit application No.: 2485/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Iron Limited

1.3. Property details

Property: Iron Ore (Cleveland Cliffs) Agreement Act 1964, Lease 3116/4623, Special Lease for Mining Operations I 123396 L
Local Government Area: Shire of Roebourne
Colloquial name: Cape Lambert Gas Pipeline Relocation

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

The vegetation of the application area is broadly mapped as Beard Vegetation Association 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* (GIS Database; Shepherd et al., 2001).

Biota Environmental Sciences (Biota) conducted a flora survey of the Cape Lambert area, representing all the main vegetation associations within the application area (Pilbara Iron Pty Ltd, 2008).

The following seven vegetation types were identified within the application area, broadly associated with topographic features;

- 1) Flat Coastal Plain: Open *Acacia* spp. shrubland over scattered low *Scaevola spinescens*, *Rhagodia eremaea* shrubs over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* tussock grassland.
- 2) Primary Dunes: 2a: Open *Spinifex longifolius* hummock grassland with *Eulalia aurea*, *Whiteochloa airoides* and *Cenchrus ciliaris* open tussock grassland. 2b: Open *Crotalaria cunninghamii*, *Acacia coriacea* shrubland over *Santalum lanceolatum*, *Aerva javanica* low open shrubland over *Triodia epactia* very open hummock grassland and *Cenchrus ciliaris*, *Whiteochloa airoides* open tussock grassland.
- 3) Secondary Dunes: Tall open *Acacia coriacea subsp., coriacea* shrubland over *Tephrosia rosea var. venulosa ms.* low open shrubland over *Cenchrus ciliaris* open tussock grassland.
- 4) Dune Blowouts: *Acacia* spp. shrubland over *Rhagodia eremaea* low open shrubland over *Triodia epactia* scattered hummock grasses and *Cenchrus ciliaris* open tussock grassland.
- 5) Rocky Hills and Outcrops: Bare rock, extremely shallow soil with large rockpiles at summit completely devoid of vegetation and areas below rockpiles colonised by *Cenchrus ciliaris*, *Triodia wiseana* and/or *T. epactia* hummock grassland.
- 6) Low-Lying Saline Drainage: Low *Halosarcia* spp. samphire shrubland or open heath, with open *Frankenia ambita*, *Muellerolimon salicorniaceum* low shrubland.
- 7) Saline Interzone: Tall *Acacia ampliceps* shrubland, with *Sesbania cannabina* tall open herbland over *Sporobolus virginicus* tussock to closed tussock grassland. (Biota, 2008).

The most dominant vegetation types occurring within the application area are dune blowouts (approximately 36%), flat coastal plain (approximately 10%) and secondary dunes (approximately 10%) (Biota, 2008).

Three species of introduced flora (from three genera and two families) were recorded within the application area: Buffel Grass (*Cenchrus ciliaris*); Kapok Bush (*Aerva javanica*) and Purple top Windmill Grass (*Chloris barbata*) (Biota, 2008).

Clearing Description

Robe River Iron Ltd (Robe River Iron) have applied to clear 28.7 hectares (ha) of native vegetation for the purposes of relocating a natural gas pipeline at Cape Lambert. The areas cleared will include construction sites, laydown areas, access tracks, topsoil and vegetation stockpiles and trenches for the pipeline (Pilbara Iron Pty Ltd, 2008).

The application area is immediately adjacent to an existing pipeline and tracks. The relocation of the pipeline will occur within a 50m wide easement, stretching 4km in length (Pilbara Iron Pty Ltd, 2008). Disturbed areas along the easement and tracks will be rehabilitated, following completion of the project (Pilbara Iron Pty Ltd, 2008).

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)

To

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)

Comment

The vegetation condition was derived from a vegetation survey conducted by Biota Environmental Sciences (2008).

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 not likely to be at variance to this Principle**

The application area occurs within the Chichester (PIL1) sub-region of the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). This sub-region is characterised by plains supporting shrub steppe of *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002). The vegetation described within the application area is typical of the bioregion (Robe River Iron, 2008).

A vegetation survey of the application area and surrounding vegetation identified 157 taxa of native vascular flora from 87 genera and 39 families (Biota, 2008). The total number of vascular flora species present was considered to be relatively low for the study area. Poaceae (23), Papilionaceae (20), Mimosaceae (16), Malvaceae (10), Chenopodiaceae (9), Amaranthaceae (8), Asteraceae (8), Euphorbiaceae (6) and Goodeniaceae (6) families are particularly species rich and diverse within the application area (Biota, 2008).

Six introduced species were recorded during the survey, with three of these occurring within the application area, including *Cenchrus ciliaris*. This species was recorded at all but 3 of the 28 survey quadrats (Biota, 2008). The presence of introduced flora species is likely to reduce the biological diversity of the application area. Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

An area search of the Western Australian Museum's Faunabase conducted by the assessing officer suggests the application area is diverse in reptile species, particularly Skinks (25) and Geckos (16) (Western Australian Museum, 2008). The database search found a total of 87 reptile species from 10 families as potentially occurring within the application area, or within a 50 km radius of the application area. The application area is also diverse in avian species, with a total of 52 species from 33 families found as potentially occurring within the application area, or within a 50 km radius of the application area.

Although the application area is high in faunal diversity, it is not likely to have a greater diversity than similar areas within the region. The landforms, vegetation types and fauna habitats in the application area are well represented in the Pilbara Region (Biota, 2008; GIS Database). Given the high level of disturbance and vegetation degradation due to infestation with introduced (weed) species and previous clearing activities it is not likely that the application area comprises a higher level of biological diversity than other undisturbed areas (Biota, 2008).

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

Methodology Biota (2008)
CALM (2002)
Robe River Iron (2008)
Western Australian Museum (2008)
GIS Database
- Pre-European Vegetation
- Interim Biogeographic Regionalisation of Australia
- Dampier Archipelago 80cm Orthomosaic - SLI01
- Cape Lambert 85cm Orthomosaic - DOLA 01

(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**

Biota conducted a systematic fauna survey over the application area and the wider Cape Lambert study area. The survey took place during two phases: Phase I occurred between October 1-12, 2007 and Phase II occurred between March 5-12, 2008 (Biota, 2008). A search of Western Australian Museum and Department of Environment and Conservation (DEC) Databases conducted by Biota on behalf of the proponent revealed several fauna species of conservation significance which have the potential to occur within the application area, based on known ranges, habitat preferences and previous sightings in surrounding areas (Biota, 2008).

This search identified 2 Amphibian, 63 Avian, 17 Mammalian and 38 Reptilian species that may occur within the search area (Biota, 2008). The following fauna species of conservation significance have the potential to occur within the application area: Star Finch (*Neochmia ruficauda subclaescescens*), Rainbow Bee-Eater (*Merops ornatus*), Green Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricata*) and the Flatback Turtle (*Natator depressus*). In addition to the aforementioned species, Biota (2008), recorded 20 specimens of the skink *Lerista neviniae* from the primary and secondary dune habitats occurring within the application area.

The Star Finch (P4 - DEC Priority Fauna List) occurs in reedbeds and adjacent vegetation communities along permanent waterways. The habitat types found within the application area may support populations of the Star Finch. However, it is unlikely that the vegetation to be cleared represents significant habitat for this species, given the lack of permanent waterways within the application area and the vegetation being well represented

within the Pilbara region (Biota, 2008).

The Rainbow Bee-Eater (migratory - JAMBA International Agreement) occurs mainly in open forests, woodlands and shrublands but also occurs in inland and coastal sand dune systems and mangroves in Northern Australia (Western Australian Museum, 2008). This species may occur within the application area, however given the widespread representation of this habitat type throughout the Pilbara region and the degradation found within the application area it is unlikely that the application area contains significant habitat for this species.

The Green Turtle, Hawksbill Turtle and Flatback Turtle all occur along the coast of the Pilbara and nest between November and January with hatchlings emerging from nests between December and March. The proposed clearing is unlikely to impact upon the habitat of the turtles or the hatchlings, given that no construction works will take place within the marine environment and the proponent has advised that vehicles and machinery will only use designated tracks and roads and off-road traversing is prohibited (Pilbara Iron Pty Ltd, 2008). The lighting used during the construction activities may disorientate the emerging hatchlings, however the proponent has advised that construction activities will be only undertaken during daylight hours (Robe River Iron, 2008).

Approximately 20 specimens of the skink, *Lerista neviniae*, were recorded from the primary and secondary dune habitats in the Cape Lambert area (Biota, 2008). The skink, although not being listed as having any special conservation status at either State or Federal level, currently has only been recorded from the coastal dune habitats of the Cape Lambert area (Biota, 2008).

Biota (2008) has assessed and mapped the vegetation types of the application area and surrounding Cape Lambert project area. A total of 0.31 hectares of Primary Dune and 9.35 hectares of Secondary Dune habitat have been recorded for the Cape Lambert project area (Biota, 2008). The Primary Dune and Secondary Dune habitat that has been identified by Biota (2008) is likely to represent suitable habitat for *Lerista neviniae*. Biota (2008) have indicated that the proposed clearing for the gas pipeline will impact on approximately 9.66 hectares of the Primary and Secondary Dune habitat that has been identified within the local area. Given that approximately 6.6% of this habitat type will be impacted by the proposed clearing, leaving 93.4% of habitat undisturbed, it is unlikely that the proposed clearing will have a significant impact on the habitat of this species. Furthermore the proponent has advised that the coastal dune vegetation will be avoided in the siting of laydown areas and access tracks in order to minimise the impact to the skink habitat (Robe River Iron, 2008).

The dominant fauna habitats occurring within the application area are the primary and secondary coastal dune systems. The primary dune system consists of *Acacia coriacea* over *Spinifex longifolius*, Buffel Grass (*Cenchrus ciliaris*) and Kapok Bush (*Aerva javanica*) on coastal sand, while the secondary dune system consists of *Acacia coriacea* over *Triodia epactia* and Buffel Grass (*Cenchrus ciliaris*) on red sand (Biota, 2008). The habitat communities present in a large part of the application area have a significant level of degradation due to infestation with Buffel Grass and compared to native vegetation communities do not provide significant habitat to local fauna species (Biota, 2008).

It should be noted that the fauna habitats occurring within the application area are well represented in the Pilbara region and the species have been recorded from the wider Cape Lambert area.

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

Methodology Biota (2008)
DEC (2008)
DEWHA (2008)
Robe River Iron (2008)
Pilbara Iron Pty Ltd (2008)
Western Australian Museum (2008)
GIS Database
- Threatened Fauna

(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

According to available databases, no Declared Rare or Priority flora species have been recorded within the application area. Six populations of *Terminalia supranitifolia* (P1) have been recorded approximately 35-59 km west of the application area on the Burrup Peninsula (GIS Database).

Biota conducted a flora and vegetation field survey of the application area between October 2007 and March 2008 (Biota, 2008). No species of Declared Rare or Priority flora were recorded during the flora survey.

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

Methodology Biota (2008)
GIS Database
- Declared Rare and Priority Flora List

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

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

There are no known Threatened Ecological Communities (TEC's) within the application area (GIS Database). The nearest known endorsed TEC's are the Themeda Grassland communities located approximately 181 km south of the application area (GIS Database). The nearest known ecosystem of conservation significance is the Millstream stygofauna community (a non-endorsed TEC), located approximately 105 km to the south of the application area. Due to the distance from the application area, these ecosystems are unlikely to be affected by the proposed clearing.

Biota (2008) reported that no Threatened Ecological Communities were identified during the flora survey of the application area.

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

Methodology Biota (2008)
GIS Database
- Threatened Ecological Communities

(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 application area falls within the IBRA Pilbara Bioregion. Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists in this Bioregion. The vegetation in the application area is recorded as Beard Vegetation Association 157: Hummock grasslands, grass steppe; hard spinifex *Triodia wiseana* (GIS Database; Shepherd et al., 2001). According to Shepherd et al., (2001) there is approximately 99.9% of this vegetation type remaining (see table below).

Therefore the vegetation within the application area is not a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% of Pre-European area in IUCN Class I-IV Reserves (and current %)
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
157	502,737	501,522	~99.8	Least Concern	17.2
Beard veg assoc. – Bioregion					
157	198,636	198,522	~99.9	Least Concern	5.7

* Shepherd et al. (2001) updated 2005

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd et al. (2001)
GIS Database
- 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 is not likely to be at variance to this Principle

There are no watercourses or wetlands within the application area (GIS Database).

There are two minor non-perennial watercourses in proximity to the application area and a perennial lake 0.74 km south/south-east of the application area (GIS Database). Mangroves occur approximately 1 km south-west and 2 km south-east of the application area (GIS Database).

There is an un-named inland water body approximately 9 km south/south-east of the application area (GIS Database). There are several ephemeral drainage lines to the south of the application area (Robe River Iron, 2008).

Therefore the proposed clearing is unlikely to have any significant impact on any watercourses or wetlands.

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

Methodology Robe River Iron (2008)
GIS Database
- Hydrography - Linear
- Geodata - Lakes

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

Comments Proposal may be at variance to this Principle

The application area has been surveyed by the Department of Agriculture and Food (Van Vreeswyk et al., 2004), and is comprised of the following land systems (GIS Database);

- Ruth Land System
- Littoral Land System

The Ruth Land System is described as hills and ridges of volcanic and other rocks supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'Lower slopes and stony plains' and 'sandplains' land units. This land system is not susceptible to erosion due to a surface mantle of cobbles and pebbles. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Biota, 2008).

The Littoral Land System is described as bare coastal mudflats with mangroves on the seaward fringes, samphire flats, sandy islands, coastal dunes and beaches (Van Vreeswyk et al., 2004). An analysis of aerial photography for the area reveals the application area is most likely to fall within the 'Coastal dunes' and 'tidal flats' land units. The coastal dunes of this land system are highly susceptible to wind erosion if vegetation cover is lost (Van Vreeswyk et al., 2004). The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Biota, 2008).

The development will involve a disturbance to the primary coastal dune (approximately 0.31 ha) and the secondary coastal dune (approximately 9.35 ha) systems and to a dune blowout area (approximately 0.4 ha). The proponent has advised that the disturbance to the dunes will be limited where practicable and all disturbed dune areas will be stabilized during rehabilitation (Pilbara Iron Pty Ltd, 2008).

The proponent has advised that appropriate measures will be implemented to minimise erosion and control sediment. Clearing for the relocation of the Cape Lambert pipeline will be managed through the Construction Environmental Management Plan for the Cape Lambert Pipeline Relocation Project, which contains detailed procedures to be followed for clearing, topsoil management, dust management and erosion and sediment control (Pilbara Iron Pty Ltd, 2008).

Provided appropriate erosion control measures are implemented, the proposed clearing is unlikely to cause appreciable land degradation.

Such management procedures include:

Topsoil Management Procedures

- For the temporary laydown areas, haul roads, borrow areas and access roads, the top 100 mm of the soil profile will be stripped and stockpiled no higher than 2.5 m, clearly signposted and demarcated on site plans;
- Where practicable, topsoil will not be stripped when wet;
- Topsoil stockpiles shall be located and engineered such that topsoil loss due to runoff and erosion is minimised;
- Topsoil will be applied to a minimum depth of approximately 100 mm with a dozer as soon as practicable to areas being rehabilitated;
- To minimise airborne dust from the topsoil stockpiles, non-saline water will be applied to stabilise the surface where practicable. Surfaces will be checked to ensure crusting does not inhibit seed germination, which also serves to reduce wind erosion;
- Quarterly monitoring of stockpiles for weed control will be undertaken.

Dust Management Procedures

- Exposed surfaces such as stockpiles and cleared areas, and the duration that these areas are exposed, will be minimised;
- Dust suppression techniques and/or watering of unsealed roads, access routes, exposed ground surfaces and stockpiles will be implemented;
- Ensure that vehicles, machinery and loads are properly maintained and covered to minimise dust emissions.

Erosion and Sediment Control Procedures

- Movement of vehicles will be restricted to designated tracks/roads, and will adhere to onsite speed limits;
- Where installation of sediment traps is necessary but not possible, provide temporary sediment control, such as silt fences or interceptor ditches;
- Minimise steepness and length of slope of created landforms;
- Areas susceptible to slope instability will be stabilised.

Based on the above, the proposed clearing may be at variance to this Principle. However, provided the proponent implements appropriate erosion control measures, the potential for the proposed clearing to cause appreciable land degradation will be mitigated.

Methodology Biota (2008)
Pilbara Iron Pty Ltd (2008)
Van Vreeswyk et al. (2004)
GIS Database
- Rangeland Land System Mapping

(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 nearest terrestrial DEC managed land is the Millstream Chichester National Park, located approximately 59 km south of the application area (GIS Database).

There are several nearby islands listed as Environmentally Sensitive Areas (ESA's). The nearest of these are:

- Bezout Island - located approximately 5 km north/north-east of the application area
- Dixon Island - located approximately 6 km west/north-west of the application area
- Picard Island - located approximately 14 km south-east of the application area (GIS Database).

These islands comprise part of the Dampier Archipelago and are a Registered National Estate (DEWHA, 2008).

The Archipelago is comprised of 42 islands, islets and rocks ranging from less than 2 hectares to 3,290 hectares in size covering an area of approximately 4,000 square kilometres (DEWHA, 2008). The terrestrial areas of the Dampier Archipelago support a high diversity of flora, bird and reptile species. More than 288 plant species from 60 families have been recorded from the Dampier Archipelago. Over one hundred species of bird have been recorded, including terrestrial, sea and shore birds. Thirty two species of reptiles have been recorded from the Burrup Peninsula and forty one species recorded from the islands of the Dampier Archipelago (DEWHA, 2008). The diversity of fauna occurring within the marine environment is high, with the north-west shelf containing significant conservation value (DEWHA, 2008).

At this distance it is not likely that the vegetation within the application area provides a buffer to a conservation area, or is an important ecological link to a conservation area.

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

Methodology DEWHA (2008)
GIS Database
- CALM Managed Lands and Waters (category)
- Clearing Regulations - Environmentally Sensitive Areas

(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 has suffered previous disturbance (Pilbara Iron Pty Ltd, 2008), and the small area of clearing is unlikely to have any impact on ground water level or quality.

The application area is relatively flat and the proposed clearing area is unlikely to result in significant changes to surface water flows, particularly given that no watercourses are present within the application area (GIS Database).

The application area is located in a semi-desert-tropical region, with an average annual rainfall of approximately 300mm falling mainly during the summer months, and an average annual evaporation rate of approximately 2,500mm (CALM, 2002), hence the presence of surface water resulting from significant rain events is relatively short-lived.

The proposed clearing of disturbed and degraded vegetation is unlikely to have any significant impact on surface water flows or quality.

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

Methodology CALM (2002)
Pilbara Iron Pty Ltd (2008)
GIS Database
-Hydrography - Linear
-Topographic Contours - Statewide

(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 drains into the Coastal Catchment Area (GIS Database). The relatively small area to be cleared (28.7 hectares) in relation to the size of the catchment area (744, 301 hectares) (GIS Database) is unlikely to cause or exacerbate the incidence or intensity of flooding.

The majority of the application area is located on sand, which is free-draining; hence the clearing is unlikely to result in flooding.

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

Methodology GIS Database
- Hydrographic Catchments - Catchments
- Hydrography - Linear

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

Comments

This clearing permit was referred to the EPA by Pilbara Iron Pty Ltd in accordance with Section 38 of the *Environmental Protection Act 1986* (WA). The EPA determined that the proposed vegetation clearing could be adequately managed by the Clearing Regulations under Part V of the *Environmental Protection Act 1986* (EPA, 2008).

There is one native title claim (WC99-014) over the area under application. This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement 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*.

One Aboriginal Site of Significance occurs within the application area (Site ID: 8950) and several others are in close proximity to the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with 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.

No public submissions were received regarding this application.

Methodology EPA (2008)
GIS Database
- Aboriginal Sites of Significance
- Native Title Claims

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles, and the proposal may be at variance to Principle (g), is not at variance to Principle (e), and is not likely to be at variance to Principles (a), (b), (c), (d), (f), (h), (i) and (j).

Should the permit be granted, it is recommended that conditions be imposed on the permit for the purposes of fauna management, weed management, recording areas cleared and reporting against the permit conditions.

5. References

- Biota (2008) Cape Lambert Natural Gas Pipeline Relocation: Native Vegetation Clearing Permit Report. Biota Environmental Sciences Pty Ltd, Western Australia.
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- Robe River Iron (2008) Cape Lambert Operation. Relocation of Existing Natural Gas Pipeline. Application to Clear Native Vegetation (Purpose Permit). Supporting Documentation. Robe River Iron Ore Pty Ltd, Western Australia.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001a) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia (updated 2005).
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia. Department of Agriculture, Western Australia.
- Western Australian Museum (2008). Faunabase - Western Australian Museum, Queensland Museum and Museum and Art Gallery of NT Collections Database. <http://www.museum.wa.gov.au/faunabase/prod/index.htm> (accessed June 17 2008). Western Australian Museum.

6. Glossary

Acronyms:

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

Definitions:

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

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

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

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

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

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

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

- EX Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W) Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or

(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CR **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

EN **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.