



1. Application details

1.1. Permit application details

Permit application No.: 2946/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Iron Ore (Hamersley Range) Agreement Act 1964, Special Lease for Mining Operations 3116/3469, Lots 24, 29, 30, 31 on Deposited Plan 241
Iron Ore (Hamersley Range) Agreement Act 1963, Special Lease for Mining Operations 3116/4984, Lease I 195323 L, Lots 9, 13, 32 on Deposited Plan 47815

Local Government Area: Shire Of Roebourne
Colloquial name: Carpark and Fibre Optic Cable Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
17		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	Clearing Description	Vegetation Condition	Comment
Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia. Three Beard Vegetation Associations are located within the application area (Shepherd et al, 2001):	Hamersley Iron Pty Ltd (Hamersley Iron) has applied to clear up to 17 hectares of native vegetation within an area of approximately 30.6 hectares (GIS Database). The proposed clearing is located approximately 10 kilometres west of Karratha (GIS Database).	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).	The vegetation condition rating was based on the flora and vegetation survey of the proposed clearing area which was conducted by GHD in September 2008.
Beard Vegetation Association 117: Hummock grasslands, grass steppe; soft spinifex.			
Beard Vegetation Association 127: Bare areas; mudflats.			
Beard Vegetation Association 589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe, soft spinifex.	The purpose of the proposed clearing is for a parking bay extension and installation of a fibre optic cable (Hamersley Iron, 2008). Vegetation clearing will be undertaken via mechanical means using a bulldozer and vegetation will be stockpiled for rehabilitation purposes (Hamersley Iron, 2008).	To	GHD (2008) reported that most of the application areas have previously been cleared or have been subject to disturbances, such as weed encroachment, rubbish, informal access tracks, rock stockpiles and infrastructure, all of which have significantly altered the vegetation structure.
GHD Pty Ltd (GHD) was commissioned by Rio Tinto Iron Ore (RTIO) to conduct a flora and vegetation assessment of the application area in September 2008. GHD (2008) identified the following four vegetation units within the application area:			
1) Spinifex with Acacias Scattered shrubland of <i>Acacia pyrifolia</i> , <i>Acacia bivenosa</i> and <i>Acacia coriacea</i> subsp. <i>coriacea</i> over low mixed scattered shrubs of <i>Grevillea pyramidalis</i> , mixed <i>Senna</i> species and mixed <i>Chenopod</i> species over hummock grassland of <i>Cenchrus ciliaris</i> and mixed <i>Triodia</i> species.			
2) Acacia-Type Creeklines Low open woodland of <i>Corymbia hamersleyana</i> over scattered shrubs of mixed <i>Acacia</i> species, <i>Trianthema turgidifolia</i> and mixed <i>Chenopod</i> species over open hummock grassland of <i>Triodia wiseana</i> , <i>Triodia longiceps</i> , <i>Triodia pungens</i> and <i>Cenchrus ciliaris</i> over scattered herbs of <i>Pluchea rubelliflora</i> and <i>Pterocaulon sphyacelatum</i> .			
3) Samphires and Halophytes Low mixed shrubland of <i>Trianthema turgidifolia</i> , mixed <i>Chenopod</i> species and <i>Aerva javanica</i> over open tussock grassland of <i>Cenchrus ciliaris</i> and <i>Triodia longiceps</i> .			

4) Heavily Disturbed

Heavily disturbed / predominantly cleared areas but some disturbance opportunists such as grasses, including *Cenchrus ciliaris*, and *Chenopods* such as *Salsola tragus*.

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 is located within the Roebourne Interim Biogeographic Regionalisation for Australia (IBRA) subregion (GIS Database). The Roebourne subregion primarily consists of quaternary alluvial plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* over *Triodia pungens* (CALM, 2002). The climate of the Roebourne subregion is semi-arid-tropical with summer rain and has significant cyclonic activity (CALM, 2002).

The application areas are located on the Burrup Peninsula and near to the Dampier Archipelago region (GIS Database) which is a region of high diversity (DEWHA, 2008). Over 100 species of birds have been recorded within the Dampier Archipelago region, including both terrestrial and sea and shore birds, some migratory (DEWHA, 2008). Many reptiles occur within the region with 32 species known from the Burrup Peninsula and 41 species known from the Dampier Archipelago (DEWHA, 2008). In addition, the region is high in plant diversity with 393 species of vascular plants recorded from the Burrup Peninsula, representing 67 families and 184 genera (DEWHA, 2008).

A flora survey of the application area was carried out by GHD in September 2008. This survey identified a total of 154 taxa from 35 families within the application area (GHD, 2008). Within the application area the plant families with the highest species richness are the Grass family (*Poaceae*), Pea family (*Papilionaceae*), Wattle family (*Mimosaceae*) and the Samphire family (*Chenopodiaceae*) (GHD, 2008).

The application areas show extensive invasion by weeds (GHD, 2008). Six weed species have been identified within the application areas: Buffel Grass (*Cenchrus ciliaris*), Kapok Bush (*Aerva javanica*), Date Palm (*Phoenix dactylifera*), Spiked Malvastrum (*Malvastrum americanum*), Mimosa Bush (*Vachellia farnesiana*) and Ruby Dock (*Acetosa vesicaria*) (GHD, 2008). The presence of these introduced weed species lowers the biodiversity value of the proposed clearing area. Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

GHD (2008) conducted a reconnaissance field survey of the application area that included desktop investigations and opportunistic field surveys. The reconnaissance survey identified a total of 19 bird species, one mammal species and four reptile species within the application areas (GHD, 2008). This survey is limited in that it only provides a brief snapshot of those species present during the daytime, in one season, in one year (GHD, 2008). A search of the Western Australian (WA) Museum Faunabase indicates that up to 25 mammal species, 43 bird species, 4 amphibian species and 77 reptile species have the potential to occur within a 50 kilometre radius of the application area (WA Museum, 2009). This indicates a relatively high level of faunal diversity, however, this diversity can be primarily attributed to the complex topography of the Burrup Peninsula and Dampier Archipelago and the consequent diversity of habitats in these areas (DEC, 2006). Therefore, the application area is expected to have lower fauna species diversity than indicated above.

The vegetation condition of the application areas ranged from Good to Completely Degraded with only a small proportion of the areas being classed as Good with the majority falling into the class of Degraded to Completely Degraded (GHD, 2008). Most of the area surveyed by GHD (2008) had previously been cleared or has been subject to disturbances, such as weed encroachment, rubbish, informal access tracks, rock stockpiles and infrastructure, all of which have significantly altered the vegetation structure. All landforms, flora species and communities and fauna habitats within the application areas are well represented locally and within the Pilbara region generally (GHD, 2008).

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

Methodology

CALM (2002)
DEC (2006)
DEWHA (2008)
GHD (2008)
WA Museum (2009)
GIS Database
- Interim Biogeographic Regionalisation for Australia (subregions)

(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

A fauna habitat assessment of the application area was undertaken in conjunction with the flora and vegetation survey by GHD (2008). In order to identify species habitat that may potentially occur within the application area, GHD (2008) carried out a search of the WA Museum and Department of Environment and Conservation (DEC) databases to identify Schedule and Priority listed fauna that may occur within a 10 kilometre radius from the application areas. A search of the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* database was also conducted (GHD, 2008). In addition, a fauna reconnaissance survey was carried out in conjunction with the flora and vegetation field survey to identify fauna species and fauna habitat within the application area.

GHD (2008) identified six fauna habitats within the application areas:

- 1) Open grasslands;
- 2) Open shrublands and woodlands over mixed grassland on plains;
- 3) Coastal areas;
- 4) Drainage lines;
- 5) Chenopod shrubland; and
- 6) Disturbed and cleared areas.

The vegetation and habitat types that have been identified and described for the application areas appear typical of the Burrup Peninsula area (GHD, 2008). Vegetation mapping confirms that all the habitat types that have been identified within the application areas are well represented and distributed throughout the Burrup Peninsula area (GHD, 2008). In addition, the small size of the Parking Bay Extension application area and the linear nature of the Optic Fibre Cable application area make it unlikely that these areas contain significant habitat for any fauna species likely to be present.

GHD (2008) have indicated that the application areas as well as the surrounding areas have been significantly disturbed as a result of industry in the area as well as from weed infestation. It is likely that these disturbances have adversely impacted on the presence of native flora species and the habitat values for the area.

The application areas have the potential to be frequented by numerous bird species, including migratory birds. This is in part due to the Burrup Peninsula's location within the Dampier Archipelago (DEWHA, 2009). Over 100 bird species have previously been recorded in the Dampier Archipelago region with numerous bird species known to breed on the islands and many more known to use the extensive mudflats, intertidal reefs and saltmarshes found within the region (DEWHA, 2009). Due to the disturbed and modified nature of the application areas and surrounding areas it is likely that bird species within the region would be more common within less degraded areas and on conservation islands off the coast. Therefore, the vegetation of the application areas is not likely to be significant habitat for any bird species.

GHD (2008) has assessed and mapped the application areas. GHD (2008) report that the Optic Fibre Cable application area is considered to be Degraded to Completely Degraded, having been previously cleared. Weeds, rubbish, informal access tracks, rock stock piles and infrastructure are present within this application area (GHD, 2008). GHD (2008) has rated the Office Parking Bay Extension application area as being in Good condition, with some basic vegetation structure being maintained. However, GHD (2008) report the presence of weeds and rubbish as well as a track running through this application area.

The vegetation and habitat types that have been identified and described for the application areas are typical of the Burrup Peninsula area (GHD, 2008). Given the disturbed nature of the application areas, the 17 hectares of vegetation proposed to be cleared under this proposal is not likely necessary for the maintenance of significant habitat for any fauna species.

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

Methodology DEWHA (2009)
GHD (2008)

(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

GHD (2008) undertook a flora and vegetation assessment of the application area in September 2008. This assessment consisted of a desktop search of available databases and literature, as well as a field survey (GHD, 2008). In addition, the assessing officer has conducted a search of Department of Environment and Conservation's (DEC's) databases including Florabase and NatureMap, for Declared Rare flora (DRF) and Priority Flora species occurring within 40 kilometres of the application areas. No DRF have been recorded as occurring within 40 kilometres of the application areas (DEC, 2009; GIS Database).

The database search by the assessing officer found eight Priority flora species that have been recorded as

occurring within 40 kilometres of the application areas (DEC, 2009):

- *Acacia glaucocaesia* (Priority 3)
- *Gymnanthera cunninghamii* (Priority 3)
- *Rynchosia bungarensis* (Priority 3)
- *Schoenus punctatus* (Priority 3)
- *Tephrosia bidwillii* (Priority 3)
- *Terminalia supranitifolia* (Priority 3)
- *Themeda sp.* Hamersley Station (Priority 3)

None of the above Priority flora species are known to occur within the application areas (DEC, 2009; GIS Database). In addition, the flora and vegetation survey conducted by GHD (2008) did not identify any DRF or Priority flora species within the application areas.

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

Methodology DEC (2009)
GHD (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). There are three Priority 1 Priority Ecological Communities (PEC's) within 5 kilometre's of the application areas (GHD, 2008):

- **Burru Peninsula Rock Pool Communities:**
Calcareous tufa deposits. Interesting aquatic snails.
- **Burru Peninsula Rock Pile Communities:**
Comprise a mixture of Pilbara and Kimberley species, communities are different from those of the Hamersley and Chichester Ranges.
- **Roebourne Plains Coastal Grasslands (Gilgai Grasslands):**
The Roebourne Plains coastal grasslands with gilgai micro-relief of deep cracking clays are self mulching cracking clays that emerge on depositional surfaces. The Roebourne Plains Gilgai grasslands occur on micro-relief of deep cracking clays, surrounded by clay plains/flats and sandy coastal and alluvial plains. The Gilgai depressions supports ephemeral and perennial tussock grasslands dominated by *Sorghum sp.* and *Eragrostis xerophila* (Roebourne Plains Grass) along with other native species including *Astrelba pectinata* (Barley Mitchell Grass), *Eriachne benthamii* (Swamp Wanderie Grass), *Chrysopogon fallax* (Golden Beard Grass) and *Panicum decompositum* (Native Millet).

GHD (2008) report that none of these PEC's occur within the application areas. The application areas have already suffered a high level of disturbance and the further clearing of 17 hectares of vegetation is unlikely to have an impact on any TEC's or PEC's.

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

Methodology GHD (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 (see table below). The vegetation in the application area is recorded as the following three Beard Vegetation Associations (Shepherd et al, 2001):

Beard Vegetation Association 117: Hummock grasslands, grass steppe; soft spinifex.

Beard Vegetation Association 127: Bare areas; mudflats.

Beard Vegetation Association 589: Mosaic: Short bunch grassland – savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex.

According to Shepherd et al. (2001) approximately 94.5% of Vegetation Association 117, 98.5% of Vegetation Association 127 and 100% of Vegetation Association 589 remain within the Bioregion (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**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
117	919,751	886,791	~96.4	Least Concern	13.2
127	742,653	719,983	~96.9	Least Concern	7.5
589	809,764	809,647	~99.9	Least Concern	1.6
Beard veg assoc. – Bioregion					
117	74,507	70,410	~94.5	Least Concern	12.2
127	180,369	177,714	~98.5	Least Concern	0.0
589	730,724	730,690	~100	Least Concern	1.8

* 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 Shepherd et al. (2001)
Department of Natural Resources and Environment (2002)
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 at variance to this Principle

There are no permanent natural watercourses or wetlands within the application areas, however, there is one man-made waterbody within the fibre optic cable application area that is groundwater dependent and several minor, non-perennial watercourses within the application areas (GHD, 2008; GIS Database). The entire Pilbara region tends to have an annual average evaporation rate that is significantly higher than the annual average rainfall (ANRA, 2007). Therefore, the minor, non-perennial watercourses within the application area are expected to be dry for the majority of the year except following cyclonic rainfall events which generally occur between November and March (ANRA, 2007).

The application areas partly include the following watercourse related vegetation unit (GHD, 2008):

- 1) Acacia-Type Creeklines:** Low open woodland of *Corymbia hamersleyana* over scattered shrubs of mixed *Acacia* species, *Trianthema turgidifolia* and mixed *Chenopod* species over open hummock grassland of *Triodia wiseana*, *Triodia longiceps*, *Triodia pungens* and *Cenchrus ciliaris* over scattered herbs of *Pluchea rubelliflora* and *Pterocaulon sphacelatum*.

This vegetation unit occurs in a small area along the fibre optic cable application area and is rated as being in primarily degraded condition (GHD, 2008). In addition this vegetation unit is reported to be relatively common throughout the Burrup Peninsula region (GHD, 2008).

The application area crosses through a coastal salt flat; an area of inundation (GIS Database). The coastal salt flat is highly modified due to salt works and a large portion of it consists of drains and evaporation ponds (GIS Database).

Based on the above, the proposed clearing is at variance to this Principle. However, due to the highly disturbed nature of the application areas, and the infrastructure adjacent to the application areas, the proposed clearing is not likely to have a significant impact upon any watercourse or wetland.

Methodology ANRA (2007)
BOM (2009)
GHD (2008)
GIS Database
- Hydrography, linear
- Natmap - 250k Series Mapping - (GA 08/03 (Image))

(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 application areas are mapped as occurring within the following land systems (GIS Database):

- Granitic Land System;
- Littoral Land System;
- Cheerawarra Land System; and
- Horseflat Land System.

The Cheerawarra Land System consists of sandy coastal plains and saline clay plains supporting hard spinifex grasslands and minor tussock grassland (Van Vreeswyk et al., 2004). This system is considered to be highly susceptible to wind erosion if the vegetative cover is depleted (Van Vreeswyk et al., 2004), however the thin, linear shape of the fibre optic cable application area is unlikely to greatly increase erosion of this land system, and in addition the application area runs parallel to a road and other areas of disturbance.

The Granitic Land System is described as rugged granitic hills supporting shrubby hard and soft spinifex grasslands. This system is described as being poorly accessible, subject to fairly frequent burning and is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Horseflat Land System consists of gilgaied clay plains supporting tussock grasslands and minor snakewood shrublands (Van Vreeswyk et al., 2004). The non-gilgaied plains, alluvial plains and dissected slopes of this system are moderately to highly susceptible to erosion if vegetation is depleted, however, other flat units with clay soils and stony mantles are inherently resistant (Van Vreeswyk et al., 2004). There is only a very small portion of the application areas that falls within this land system, with the majority of the application areas falling within the other three land systems.

The Littoral Land System consists of bare coastal mudflats with mangroves on seaward fringes, samphire flats, sandy islands, coastal dunes and beaches (Van Vreeswyk et al., 2004). Approximately 70% of this system is tidal flat which supports no vegetation. The coastal dunes of this land system are highly susceptible to wind erosion if the plant cover is lost by fire or other disturbance. The mangrove communities are significant habitats, however neither of these landform types occur within the application areas (Van Vreeswyk et al., 2004). The landform present within the application areas would most likely consist of Samphire flats (Van Vreeswyk et al., 2004). The Samphire flats landform is described as level plains slightly raised above adjacent bare tidal flats, up to 2 kilometres long and 500 metres wide, occasionally inundated by peak tides (Van Vreeswyk et al., 2004).

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

Methodology 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 closest conservation areas are a series of (mostly unnamed) A and C Class reserves on islands located approximately 15 kilometres north of the application area (GIS Database). The nearest onshore conservation area is the Millstream-Chichester National Park, located approximately 50 kilometres south-east of the application area (GIS Database).

Given the distance of the application area from any conservation areas, the removal of 17 hectares of native vegetation is not expected to have an impact on the environmental values of these conservation areas.

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

Methodology GIS Database
- CALM Managed Lands and Waters

(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 majority of the western Pilbara region, including the application area, has limited surface freshwater (DEC, 2006). Freshwater flows are highly variable, characterised by short periods of very high flow that coincide with major rainfall events usually associated with tropical cyclone activity (DEC, 2006). In addition, due to the low rainfall and high evaporation rate of the region, the presence of surface water resulting from significant rain events is likely to be short-lived (ANRA, 2007).

The application areas have numerous minor, non-perennial watercourses that cross through them and the fibre optic cable application area crosses through a coastal salt flat which is an area of inundation (GIS Database). The application areas and surrounding areas suffer from a high level of degradation and disturbance including the coastal salt flat area which is highly modified by salt works. Therefore, the proposed clearing of 17 hectares of vegetation is unlikely to have any further significant impact upon surface water in the Burrup Peninsula region.

The application area is located within the Granite-Greenstone Terrane (GHD, 2008). The Granite-Greenstone areas lack regional groundwater resources and therefore have little readily accessible groundwater (DoF, 2009). Hence, industry in the region is increasingly dependant on desalinated seawater (DEC, 2006). Therefore, the proposed clearing is not likely to have a significant impact on groundwater quality or groundwater levels.

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

Methodology ANRA (2007)
DEC (2006)
DoF (2009)
GHD (2008)
GIS Database
- Hydrography, linear
- Natmap - 250k Series Mapping - (GA 08/03 (Image))

(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 an arid, tropical climate with a wet summer season and dry winter season (ANRA, 2007). Most rainfall is received during the wet season with intense rainfall occurring following cyclonic events (ANRA, 2007). Following such events, it is likely that flooding of the low-lying habitat in the application areas would occur, however, the clearing of 17 hectares of vegetation, in comparison to the size of the Port Hedland Coastal catchment area (approximately 774,300 hectares; GIS Database), is not likely to lead to an increase in the incidence or intensity of flooding.

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

Methodology ANRA (2007)
GIS Database
- Hydrographic Catchments - catchments

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

Comments

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 that 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 numerous Aboriginal Sites of Significance within the vicinity of 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 Significance are damaged through the clearing process.

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

There were no public submissions received during the public comments period.

Methodology GIS Database
- Aboriginal Sites of Significance

4. Assessor's comments

Comment

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

Should the permit be granted it is recommended that conditions be imposed for the purposes of weed management, record keeping and permit reporting.

5. References

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- WA Museum (2009) Faunabase - Western Australian Museum, Queensland Museum and Museum and Art Gallery of NT Collections Databases. Available online from: <http://museum.wa.gov.au/faunabase/prod.index.htm>. Accessed 3 March 2009.

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.