



1. Application details

1.1. Permit application details

Permit application No.: 2526/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Pty Ltd

1.3. Property details

Property: Iron Ore (Cleveland-Cliffs) Agreement Act 1964, Mineral Lease 248SA (AML 70/248)
Local Government Area: Shire of Ashburton
Colloquial name: Exploration Drilling – Bungaroo Valley

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	<p>Beard Vegetation Associations have been mapped at a 1:250000 scale for the whole of Western Australia. Two Bearded Associations have been mapped within the application area (GIS Database; Shepherd et al., 2001)</p> <p>82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i>;</p> <p>609: Mosaic: Hummock grasslands, open low tree steppe; bloodwood with sparse kanji shrubs over soft spinifex/Hummock grassland, open low tree steppe; snappy gum over <i>Triodia wiseana</i> on a lateritic crust.</p> <p>The application area was surveyed by Biota Environmental Sciences and Pilbara Iron staff in August 2007 (Pilbara Iron Pty Ltd, 2007). The following vegetation types were identified within the application area:</p> <p>Vegetation of Plains and Low Rises:</p> <ol style="list-style-type: none"> <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia inaequilatera</i> tall open shrubland over <i>Ptilotus astrolasius</i> var. <i>astrolasius</i> scattered low shrub over <i>Triodia wiseana</i> hummock grassland. Stony Clay Flats: <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia inaequilatera</i> and <i>A. synchronicia</i> tall open shrubland over <i>Senna artemisioides helmsii</i> and <i>Ptilotus astrolasius</i> var. <i>astrolasius</i> scattered low shrubs over <i>Triodia pungens</i> scattered hummock grassland. <i>Acacia bivenosa</i> scattered low trees over <i>Triodia pungens</i> and <i>Triodia wiseana</i> open hummock grassland. <i>Corymbia hamersleyana</i> scattered low trees over <i>Hakea lorea</i>, <i>Acacia ancistrocarpa</i> and <i>Acacia inaequilatera</i> tall open shrubland over <i>Triodia wiseana</i> hummock grassland. Recent fire. <i>Acacia xiphophylla</i> and <i>A. synchronicia</i> open shrubland over <i>Triodia wiseana</i> open hummock grassland. <i>Acacia pyrifolia</i>, <i>A. synchronicia</i> and <i>Cullen lachnostachys</i> tall open shrubland over <i>Senna artemisioides oligophylla</i> x <i>helmsii</i> and <i>Gossypium australe</i> (Burrup Peninsula form) scattered shrubs over <i>Triodia pungens</i> very open hummock grassland. <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia colei</i> var. <i>ileocarpa</i>, <i>A. ancistrocarpa</i> and <i>A. pyrifolia</i> shrubland over <i>A. synchronicia</i>, <i>Isotropis atropurpurea</i> and <i>Senna artemisioides oligophylla</i> over <i>Triodia pungens</i> open hummock grassland. <p>Vegetation of Drainage Areas:</p> <p>Floodplains:</p> <ol style="list-style-type: none"> <i>Eucalyptus victrix</i> and <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia pyrifolia</i> and <i>A. colei</i> tall open
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	<p>shrubland over <i>Triodia pungens/epatica</i> scattered hummock grassland over <i>Stemodia grossa</i>, <i>Alternanthera nana</i> and <i>Ptilotus appendiculatus</i> scattered herbland.</p> <p>2. <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia coleii</i> var. <i>ileocarpa</i> scattered tall shrubs over <i>Acacia bivenosa</i> open shrubland over <i>Triodia pungens</i> open hummock grassland over <i>Stemodia grossa</i> herbland.</p> <p>Minor Creek Lines:</p> <p>3. <i>Eucalyptus victrix</i> over <i>Tephrosia rosea</i> var. <i>glabrior</i> and <i>Senna notabilis</i> scattered low shrubs over <i>Triodia pungens</i> scattered hummock grassland over <i>Cenchrus ciliaris</i> open bunch grassland <i>Stemodia grossa</i>, <i>Pterocaulon sphaeranthoides</i> scattered herbs.</p> <p>4. <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> tall shrubland over <i>Cullen lachnostachys</i> and <i>Melaleuca linophylla</i> scattered shrubs over <i>Pluchea rubelliflora</i> scattered low shrubs over <i>Triodia longiceps</i> scattered hummock grasses over <i>Cyperus vaginatus</i> scattered sedges over <i>Stemodia grossa</i> very open herbland.</p> <p>5. <i>Melaleuca argentea</i>, <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> and <i>Vachellia farnesiana</i> tall open shrubland over <i>Triodia longiceps</i> very open hummock grassland over <i>Cenchrus ciliaris</i> very open tussock grassland over <i>Cyperus vaginatus</i> and <i>Typha domingensis</i> open sedgeland over very open herbland over <i>Stemodia grossa</i> very open herbland.</p> <p>Major Creek Lines:</p> <p>6. <i>Eucalyptus camaldulensis</i> and <i>Corymbia hamersleyana</i> low open woodland over <i>Acacia trachycarpa</i> and <i>A. coleii</i> tall open shrubland over <i>Cullen leucanthum</i> and <i>Grevillea pyramidalis</i> open shrubland over <i>Cyperus vaginatus</i> scattered sedges over <i>Stemodia grossa</i> and <i>Pluchea rubelliflora</i> very open herbland.</p> <p>Minor Flow Lines:</p> <p>7. <i>Acacia coleii</i>, <i>A. ancistrocarpa</i> and <i>Grevillea wickhamii</i> tall shrubland over <i>Triodia wiseana</i> open hummock grassland.</p> <p>8. <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia coleii</i> var. <i>ileocarpa</i> tall open shrubland over <i>Acacia bivenosa</i>, <i>Gossypium australe</i> and <i>Adriana urticoides</i> shrubland over <i>Cenchrus ciliaris</i> very open tussock grassland. Fire <1year.</p> <p>Vegetation of Stony Hills:</p> <p>1. <i>Acacia ptychophylla</i> open shrubland over <i>Triodia wiseana</i> hummock grassland.</p>
Clearing Description	Robe River Pty Ltd (Robe River Iron) has applied to clear up to 52 hectares of native vegetation within a boundary of approximately 350 hectares for the purpose of mineral exploration (evaluation drilling). Robe River Iron intend to clear drill lines and tracks with a raised blade or scrub rake to create 610 drill pads (20m x 20m) and associated sumps.
Vegetation Condition	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 (2007) and Pilbara Iron Pty Ltd (2007). The vegetation is classified as degraded due to severe damage from grazing cattle, recent fires and weed infestation (<i>Vachellia farnesiana</i>). Previous exploration activities have also contributed to the degraded nature of the vegetation (Pilbara Iron Pty Ltd, 2007).

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 Hamersley Interim Biogeographic Regionalisation of Australia (IBRA) sub-region (GIS Database). This sub-region is characterised by Mulga low woodland over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils on the ranges (CALM, 2002). The vegetation described within the application area (Pilbara Iron Pty Ltd, 2007) is typical of the bioregion.

A vegetation survey of the application area and surrounding vegetation identified 132 native flora species belonging to 69 genera from 30 families (Pilbara Iron Pty Ltd, 2007). This is considered to be biologically diverse. Poaceae (22), Mimosaceae (16), Papilionaceae (13), Amaranthaceae (11), Malvaceae (9) and Asteraceae (8) families are particularly diverse within the survey area (Pilbara Iron Pty Ltd, 2007). This is typical of the floristics of the Pilbara IBRA Region.

An area search of the Western Australian Museum's Faunabase conducted by the assessing officer suggests that the application area is diverse in reptile species, particularly Skinks (15) and Geckos (13) (Western Australian Museum, 2008). The database search found 50 reptile species from 8 Families as potentially occurring within the application area, or within a 50 kilometre radius of the application area.

Two alien weed species were recorded within the vegetation survey area (Pilbara Iron Pty Ltd, 2007). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This in turn can lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. The weed Buffel Grass (*Cenchrus ciliaris*) was recorded as widespread throughout the area and infestations of this species are common throughout the Hamersley Range, particularly in major creek lines (Pilbara Iron Pty Ltd, 2007). This species is not listed as a 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food (DAFWA), however it is considered to be a serious environmental weed (Biota Environmental Sciences, 2007). It is not expected that the clearing of vegetation will exacerbate the infestation of Buffel grass within the application area or surrounding vegetation, but should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

Although the application area is high in floral and faunal diversity, it is not likely to have greater diversity than similar areas within the region, particularly as parts of the application area have been degraded by previous disturbance from mining activities.

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

Methodology Biota Environmental Sciences (2007)
CALM (2002)
Pilbara Iron Pty Ltd (2007)
Western Australian Museum (2008)
GIS Database
- Interim Biogeographic Regionalisation of Australia

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments Proposal may be at variance to this Principle

The assessing officer has conducted a search of the Western Australian Museum's online fauna database between the coordinates 116.86°E, 21.35°S and 115.80°E, 22.33°S, representing a 50 kilometre radius around the application area.

This search identified 3 Amphibian, 12 Avian, 17 Mammalian and 50 Reptilian species that may occur within the application area (Western Australian Museum, 2008). Of these, the following species of conservation significance have previously been recorded within the search area: Australian Bustard (*Ardeotis australis*) and the Lined Soil-Crevise Skink (*Notoscincus butleri*).

Robe River Iron (2008) conducted a desktop search of the DEC threatened fauna database to identify species of conservation significance that had been recorded within the area specified. The co-ordinates used were similar to those used by the assessing officer above. In addition to those species listed above, the following fauna species of conservation significance were identified through this database search: Northern Quoll (*Dasyurus hallucatus*), Pilbara Olive Python (*Liasis olivaceus barroni*), Middle Robe Draculoides (*Draculoides Middle Robe*), Mesa G Paradraculoides (*Paradraculoides Mesa G*), Mesa K Paradraculoides (*Paradraculoides Mesa K*), blind snake (*Ramphotyphlops ganei*) and the Western Pebble-mound Mouse (*Pseudomys chapmani*).

The Northern Quoll (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) is known to occur in a range of habitats, including eucalyptus open forest, monsoon rainforest and savannah woodland, but is most abundant (and apparently present with less fluctuation in population number) in rocky environments close to free water in creek line areas (Braithwaite et al., 1994). It has undergone substantial decline in the Pilbara and is now known to occur in geographically isolated populations (Firestone, 1999). Whilst rocky areas exist within the application area, the absence of available water suggests that the vegetation within the application area is not significant habitat for this species.

Pilbara Olive Python (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) prefers deep gorges and water holes in the ranges of the Pilbara region (Department of the Environment and Water Resources, 2007). Radio-telemetry has shown that individuals are usually in close proximity to water and rock outcrops (Department of the Environment and Water Resources, 2007). The application area does not provide habitat for this species.

Middle Robe Draculoides, Mesa G Paradraculoides and Mesa K Paradraculoides (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008*) are short range endemic arachnid species. However, there is little information regarding the habitat requirements of these species. The assessing officer is unable to determine with any certainty whether the vegetation within the application area is significant habitat for these species. The vegetation types within the application area are well represented throughout the Pilbara region and no specimens were recorded during the fauna survey

undertaken by Biota and Pilbara Iron staff. Short range endemics are likely to occur in habitats along eastern or south facing slopes (cooler and/or more humid than the west or north facing slopes), isolated wetlands or areas of wetland dependent vegetation and islands and have previously been recorded from within the target search area (Robe River Iron, 2008).

The Blind snake *Ramphotyphlops ganei* (P1 - DEC Priority Fauna List) has been collected at opposite ends of the Pilbara uplands, hence the species may occur over a substantial geographic range (Aplin, 1998). Four specimens have been recorded from Newman, not far from the application area. However, the fact that it has not previously been collected implies either a general scarcity or a very discontinuous distribution. Aplin suggests that the species is associated with the moist microhabitats which exist in many of the deeper, better shaded gorges throughout the region. Suitable habitat for this species occurs within the application area. Given the lack of information regarding the habitat preference and range of this species, it is possible that the vegetation within the application area may be significant habitat for this species.

The Australian Bustard (P4 - DEC Priority Fauna List) prefers tussock grassland, *Triodia* hummock grassland, grassy woodland and low shrublands (Garnett et al., 2000). This species may occur within the application area, however, given the widespread distribution of this species, the habitat within the application area is not likely to be significant habitat for this species.

The Lined Soil-Crevise Skink (P4 - DEC Priority Fauna List) is a small skink that is considered endemic to the Pilbara (Morton et al, 1995), It has a restricted range along the coastal area of the Pilbara, commonly occurring in spinifex dominated areas adjacent to riparian habitats. The vegetation within the application area may be suitable habitat for this species. However given the large amounts of suitable habitat within the Pilbara region and the lack of riparian vegetation within the application area, it is not likely that the vegetation within the application area would be significant habitat for this species.

The Western Pebble-mound Mouse (P4 - DEC Priority Fauna List) occurs on skeletal soils containing an abundance of small pebbles, predominantly around foot-slopes as well as in calcrete habitats (Bamford Consulting Ecologists, 2004). The species builds its mounds on foothills and rocky slopes where the surface of the ground is carpeted with small rocks (Bamford Consulting Ecologists, 2004). They are described as constructing pebble mounds on slopes composed of stony soils, near sharply incised drainage lines (Start et al., 2000). Mounds are built in vegetation dominated by hard spinifex (*Triodia basedownii*) or *T. wiseana*. No active or inactive mounds were found within the application area during the fauna survey undertaken by Biota and Pilbara Iron staff in 2007, therefore the vegetation within the application area is not likely to be significant habitat for this species.

It is acknowledged that the clearing is for a large area (52 hectares) and loss of habitat and fauna displacement are inevitable consequences of clearing activity. However, clearing will be non-contiguous, consisting of discrete drill pads (maximum size of 400 square metres) and access tracks (maximum width of 4 metres) (Robe River Iron, 2008). This clearing proposal is likely to have localised impacts to fauna species and their associated habitat given the nature of the proposal.

Based on the above, the proposed clearing may be at variance to this Principle. However, given the low impact and localised nature of the proposed clearing activities, the proposed clearing is unlikely to significantly impact on fauna habitats in the area, or cause significant habitat fragmentation in the local area.

Methodology Aplin (1998)
Bamford Consulting Ecologists (2004)
Braithwaite et al. (1994)
Department of the Environment and Water Resources (2007)
Firestone (1999)
Garnett et al. (2005)
Morton et al. (1995)
Robe River Iron (2008)
Start et al. (2000)
Western Australian Museum (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

According to available databases, no Declared Rare or Priority flora species occur within the application area (GIS Database).

A flora survey was conducted over the application area by staff from Pilbara Iron and Biota Environmental Sciences in August 2007, and the surrounding areas by Biota Environmental Sciences staff in March-April 2007 (Pilbara Iron Pty Ltd, 2007). The survey undertaken in August 2007, involved the area being traversed along each drill line within 50 metre wide corridors. All Declared Rare and Priority flora species, plants of special interest and general vegetation conditions were recorded. As a result of this survey two Priority flora species were identified, namely *Abutilon trudgenii* (P3) and *Sida sp. Wittenoorn* (P3) (Pilbara Iron Pty Ltd, 2007).

Neither of these species were recorded within the application area.

The Assessing Officer carried out a search for *Abutilon trudgenii* and *Sida sp. Wittenoom* on FloraBase on 1 July 2008 which noted that the conservation status of these species has been altered to Not Threatened (Western Australian Herbarium, 2008).

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

Methodology Pilbara Iron Pty Ltd (2007)
Western Australian Herbarium (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

According to available databases, no Threatened Ecological Communities (TEC's) occur within the application area (GIS Database). The nearest TEC occurs approximately 102 kilometres south-east of the application area (Themeda Grasslands). The nearest ecosystem of conservation significance is located approximately 77 kilometres north-east of the application area (Millstream Stygofauna Community). It is not expected that the proposed clearing will impact the conservation of this TEC.

None of the vegetation types identified within the application area (Pilbara Iron Pty Ltd, 2007) are representative of a TEC or an ecological community at risk. However, one vegetation type located approximately 1 kilometre from the south-eastern corner of the application area is an environmentally sensitive soak with priority species and is of high conservation significance (Pilbara Iron Pty Ltd, 2007). It is not expected that the proposed clearing will impact on the conservation of this ecological community, however, disturbance should be kept to a minimum along the south-eastern border.

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

Methodology Pilbara Iron Pty Ltd (2007)
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 (GIS Database). 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 Beard Vegetation Association 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* and Beard Vegetation Association 609: Mosaic: Hummock grasslands, open low tree steppe; bloodwood with sparse kanji shrubs over soft spinifex/Hummock grasslands, open low tree steppe; snappy gum over *Triodia wiseana* on a lateritic crust (GIS Database; Shepherd et al., 2001). According to Shepherd et al. (2001) there is approximately 100% of these vegetation types remaining.

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
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
82	2,565,930	2,565,930	~100	Least Concern	10.2
609	74,188	74,188	~100	Least Concern	0.0
Beard veg assoc. – Bioregion					
82	2,563,610	2,563,610	~100	Least Concern	10.2
609	74,188	74,188	~100	Least Concern	0.0

* 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
- Interim Biogeographic Regionalisation of Australia

(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

According to available databases there are many minor, non-perennial drainage lines located within the application area (GIS Database). The native vegetation recorded within the area is not riparian vegetation (Pilbara Iron Pty Ltd, 2007).

Nyeetberry Pool is located approximately 15 kilometres east of the application (GIS Database).

The Millstream Pools which are classed as an Australian Nature Conservation Agency (ANCA) wetland are located approximately 73 kilometres north-east of the application area (GIS Database).

Based on the above, the proposed clearing is at variance to this Principle. However, as the minor drainage lines located within the application area are only likely to flow following significant rainfall, the proposed clearing is unlikely to result in any significant impact to any watercourse or wetland provided natural surface water flow patterns are not disturbed.

The proponent is required to obtain a Bed and Banks Permit in order to disturb any watercourse within the application area (DoW, 2008).

Methodology DoW (2008)
Pilbara Iron Pty Ltd (2007)
GIS Database
- Hydrography - Linear
- Geodata - Lakes
- Hydrography - Lakes (Course Scale, 1M GA)

(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). The application area is composed of the following land systems (GIS Database);

- Newman Land System
- Urandy Land System
- Boolgeeda Land System
- River Land System

The Newman Land System is described as rugged jaspilite plateaux, ridges and mountains supporting hard 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 'Plateaux, ridges, mountains and hills' and 'lower slopes' land units. These land units are not susceptible to erosion due to a surface mantle of very abundant pebbles and cobbles of ironstone and other rocks, with outcrops of parent rock. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in the vegetation surveys conducted over the area (Pilbara Iron Pty Ltd, 2007).

The Urandy Land System is described as stony plains, alluvial plains and drainage lines supporting shrubby 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 'Stony plains' and 'alluvial plains' land units. The soils of these land units (red loamy earths) are not susceptible to erosion due to a surface mantle of pebbles of ironstone and other rocks. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Pilbara Iron Pty Ltd, 2007).

The Boolgeeda Land System is described as stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (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 'Stony slopes and upper plains' and 'stony lower plains' land units. The soils of these land units (red loamy earths) are not susceptible to erosion due to surface mantle of very abundant pebbles of ironstone and other rocks. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Pilbara Iron Pty Ltd, 2007).

The River Land System is described as active floodplains and major rivers supporting grassy eucalypt woodland, tussock grassland and soft spinifex grasslands (Van Vreeswyk et al., 2004). An analysis of aerial photography of the application area reveals that the application area is most likely to fall within the 'Upper terraces' and 'stony plains' land units. The soils of this land systems are largely stabilised by Buffel grass (*C. ciliaris*) and spinifex, however they are susceptible to erosion if vegetative cover is removed or lost. The vegetation described by Van Vreeswyk et al (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Pilbara Iron Pty Ltd, 2007).

Based on the above the proposed clearing may be at variance to this Principle. However, Pilbara Iron Pty Ltd (2007) has assessed and mapped the application area and a total of only 0.0117 square kilometres of the River Land System unit exists within the application area. Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of rehabilitation to minimise erosion and land degradation.

Methodology Pilbara Iron Pty Ltd (2007)
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 application area is located approximately 74 kilometres to the south-west of Millstream-Chichester National Park (GIS Database). At this distance it is not likely that the vegetation within the application area provides a buffer to a conservation area, or is important as an ecological linkage to a conservation area. The vegetation types within the application area are well replicated in other land systems within the Pilbara region. Consequently, their conservation status is under no threat.

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

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The application area is located within a *Rights in Water Irrigation Act, 1914* (RIWI Act) Surface Water Management Area (DoW, 2008; GIS Database). The proponent is required to obtain a Bed and Banks Permit in order to disturb any water course. The area is located in a RIWI Act Groundwater Area (DoW, 2008; GIS Database). The proponent is required to obtain permits to abstract groundwater in this area.

There are no permanent waterbodies or watercourses 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 (CALM, 2002). Rainfall can be either intense falls associated with cyclonic events or scattered falls associated with thunderstorm events. The application area experiences an average annual evaporation rate of approximately 2,500mm (CALM, 2002). Therefore, during normal rainfall events, surface water within the application area is likely to evaporate or be utilised by vegetation quickly.

The application area is located within the Pilbara Groundwater Area (DoW, 2008). Any extraction of groundwater in this area will require a groundwater license. The groundwater salinity within the application area is approximately 500 - 1000 milligrams/Litre Total Dissolved solids (TDS) (GIS Database). This is considered to be potable water. Given the size of the area to be cleared (52 hectares) compared to the size of the Hamersley Groundwater Province (101,668 square kilometres) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

There are no known Groundwater Dependent Ecosystems within the application area (GIS Database).

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

Methodology CALM (2002)
DoW (2008)
GIS Database
- Hydrography, Linear
- Public Drinking Water Source Areas (PDWSA's)
- RIWI Act Areas
- RIWI Act, Surface Water Areas
- RIWI Act, Groundwater Areas
- Potential Groundwater Dependent Ecosystems
- Groundwater Provinces
- Groundwater Salinity, 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 experiences a semi-desert, tropical climate with an average annual rainfall of 300mm (CALM, 2002). Rainfall is usually experienced during summer months and can be either cyclonic or thunderstorm events (CALM, 2002). It is likely that during times of intense rainfall there may be some localised flooding in adjacent areas. However, the small area to be cleared (52 hectares) in relation to the size of the Robe River Catchment area (757,138 hectares) (GIS Database) is not likely to lead to an increase in flood height or duration.

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

Methodology CALM (2002)
GIS Database
- Hydrographic Ctachments - Catchments

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

Comments

There is one Native Title Claim (WC99-012) 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*.

There is one known Aboriginal site of significance within the application area (GIS Database). Robe River Iron (2008) have advised that heritage surveys have been conducted over the application area and identified sites will be avoided. 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.

The application area is located within a *Rights in Water and Irrigation Act 1914* (RIWI Act) Surface Water Management Area (GIS Database). The proponent is required to obtain a Bed and Banks Permit in order to disturb any water course (DoW, 2008). The application area is located in a RIWI Act Groundwater area. The proponent is required to obtain permits to abstract groundwater in this area.

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.

One direct interest submission was received in relation to protection of Aboriginal Sites of Significance; however

no objection to the proposal was stated. One direct interest submission was received stating no objection to the proposal.

Methodology DoW (2008)
Robe River Iron (2008)
GIS Database
- Aboriginal Sites of Significance
- Native Title Claims
- Groundwater, Statewide
- RIWI Act - Groundwater Areas
- RIWI Act - Areas

4. Assessor's comments

Comment

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

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

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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.