



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2643/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Mining Co Pty Ltd

1.3. Property details

Property: Miscellaneous Licence 47/211
Iron Ore (Robe River) Agreement Act 1964, Special Lease for Mining Operations 3116/4622 Document I 123390, Lots 52, 61, 63 and 106 on Deposited Plan 54397
Iron Ore (Robe River) Agreement Act 1964, Special Lease for Mining Operations 3116/4621 Document I 123393, Lots 53, 62 and 64 on Deposited Plan 56850

Local Government Area: Shire of Ashburton
Colloquial name: Murray Camp Siding

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
20		Mechanical Removal	Railway construction

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 1 September 2011

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia. Two Beard vegetation associations have been mapped within the application area (GIS Database; Shepherd, 2009).

173: Hummock grasslands, shrub steppe; kanji over soft spinifex & *Triodia wiseana* on basalt; and

175: Short bunch grassland - savannah/grass plain (Pilbara)

The application area was surveyed by Pilbara Flora in May 2008 (Pilbara Flora, 2008). The following vegetation units were identified within the application area:

1. Tussock grasslands on stony plains: Mosaic of flat ground with stony mantle and tussock grasses. Low scattered shrubs over *Neptunis dimorphantha*, *Portulaca oleracea* and *Cucumis melo* subsp. *agrestis* open herb land or *Dichanthium sericeum* ssp. *humilis*, *Aristida contorta* and *Brachyachne convergens* tussock grassland.

2. Tussock grasslands on self mulching clays: Self mulching clay plains with cobblestone pushed to surface, crab-holes and tussock grasses. *Operculina aequisejala*, *Stemodia grossa*, *Oldenlandia crouchiana* and *Flaveria australasica* herb land or *Brachyachne convergens*, *Dichanthium sericeum* subsp. *humilis* and *Iseilema macratherum* closed grassland.

3. Spinifex hummock grasslands on stony hillsides: Spinifex dominated gently undulating hillsides with scattered shrubs on ironstone scree soils with occasional rocky outcropping. *Acacia inaequilatera* and *Acacia ancistrocarpa* scattered tall shrubs over *Triodia wiseana* hummock grassland.

4. Spinifex hummock grasslands on disturbed ground: *Acacia inaequilatera* scattered tall shrubs low scattered *Acacia bivenosa* and *Acacia ancistrocarpa* over *Triodia wiseana* open hummock grassland.

5. Snakewood claypan: Snakewood *Acacia xiphophylla* grove partially burnt out and dead on stony clays. *Acacia xiphophylla* low open woodland over *Neptunia dimorphantha*, *Cleome viscosa*, *Operculina aequisejala*, *Portulaca oleracea* and *Stemodia grossa* herb land.

6. Revegetated borrow pit: *Vachellia farnesiana* scattered tall shrubs over *Cenchrus ciliaris* very open tussock grassland or *Triodia wiseana* very open hummock grassland.

7. Buffel Grass and Kapok on disturbed ground: *Vachellia farnesiana* scattered tall shrubs over *Aerva javanica* low open shrubland over *Cenchrus ciliaris* open grassland.

8. Melaleuca glomerata creekline: *Melaleuca glomerata* low open forest over *Vachellia farnesiana* high shrubland over *Typha* sp., *Malvastrum americanum* and *Sesbania cannabina* low open heath over *Cenchrus ciliaris*, *Dichanthium sericeum* subsp. *humilis* and *Panicum decompositum* closed grassland.

9. Sesbania cannabina shrubland on disturbed ground: *Sesbania cannabina* and *Vachellia farnesiana* closed scrub over *Dichanthium sericeum* subsp. *humilis* and *Eriachne* sp., grassland over *Alysicarpus muelleri* and *Neptunia dimorphantha*.

10. Acacia ancistrocarpa drainage line: *Acacia ancistrocarpa* and *Gossypium australe* closed heath over *Triodia wiseana* hummock grassland.

11. Acacia tumida minor creekline: *Acacia tumida* var. *pilbarensis* and *Acacia coleii* var. *coleii* open scrub over *Triodia wiseana*, *Cenchrus ciliaris* and *Themeda triandra* tussock/hummock grassland.

12. Buffel Grass creekline: *Vachellia farnesiana* and *Acacia tumida* var. *pilbarensis* open scrub over *Aerva javanica* low shrubland or *Cenchrus ciliaris* closed tussock grassland.

Seven species of introduced flora were recorded within the application area: Kapok Bush (*Aerva javanica*); Buffel Grass (*Cenchrus ciliaris*); Ulcardo Melon (*Cucumis melo* subsp. *agrestis*); Couch (*Cynodon dactylon*); Awnless Barnyard Grass (*Echinochloa colona*); Spiked Malvastrum (*Malvastrum americanum*) and Mimosa Bush (*Vachellia farnesiana*) (Pilbara Flora, 2008).

Clearing Description Robe River Mining Co Pty Ltd (Robe River) have applied to clear 20 hectares within a 71.4 hectare area of native vegetation for the purposes of extending an existing rail siding, site building up and levelling, possible borrow excavation, installation of conduits, signalling, communication cabinets and solar panel frames, possible 25 metre masts and connection to the fibre optic cable and construction of temporary facilities.

Robe River intend to clear with dozer blade down. The application area is immediately adjacent to land that was previously cleared for road and rail infrastructure (Pilbara Flora, 2008).

Vegetation Condition Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994);

To

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

Comment The vegetation condition was derived from a vegetation survey conducted by Pilbara Flora (2008).

Clearing Permit CPS 2643/1 was granted by the Department of Industry and Resources on 9 October 2008 and was valid from 8 November 2008 to 31 July 2013. The clearing permit authorised the clearing of 20 hectares of native vegetation within a 69 hectare boundary. An application to amend the permit was received by the Department of Mines and Petroleum on 12 July 2011 requesting an increase in the boundary of the application area by 2.4 hectares.

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments **Proposal may be at variance to this Principle**

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 (Pilbara Flora, 2008).

A vegetation survey of the application area and surrounding vegetation identified 124 taxa of native vascular flora from 77 genera and 31 families (Pilbara Flora, 2008). The total number of vascular flora species present was considered to be typical for the study area. Poaceae (26), Malvaceae (11), Amaranthaceae (11), Papilionaceae (9) and Mimosaceae (8) families are particularly species rich and diverse within the application area (Pilbara Flora, 2008).

Rio Tinto botanists and Pilbara Flora botanists conducted a floristic survey of the application area and surrounding areas in March 2007 and May 2008 respectively (Pilbara Flora, 2008). Five Priority Flora species were recorded during the flora survey, however, due to review of these taxa, only one, *Rostellularia adscendens* var. *latifolia* (P3), remains a priority species (Western Australian Herbarium, 2011). This species was not recorded within the application area (Pilbara Flora, 2008).

There is one Priority Ecological Community (PEC) which may occur within the application area (Pilbara Flora, 2008). The Wona Land System PEC is a system of basalt upland gilgai plains with tussock grasslands, in Chichester National Park and in pastoral leases (DEC, 2008c). Threats include grazing by stock and Kangaroos and it has a high risk of erosion (DEC, 2008c). The Wona Land System PEC has not yet been spatially defined but as approximately 46.7 hectares of the Murray Camp Siding Area is contained within the Wona Land System there is a possibility that the application area constitutes part of this PEC (Pilbara Flora, 2008).

Seven introduced species were recorded during the survey, including *Cenchrus ciliaris* (Pilbara Flora, 2008). The presence of introduced flora species is likely to reduce the biological diversity of the application area. 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 can in turn lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

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 (23) and Geckos (13) (Western Australian Museum, 2008). The database search found 69 reptile species from 9 families as potentially occurring within the application area, or within a 50 kilometre radius of the application area.

The landforms, vegetation types and fauna habitats in the application area are well represented in the Pilbara Region (Pilbara Flora, 2008; GIS Database). The assessing officer conducted a site inspection of the application area in September 2008. It was noted during this inspection that the vegetation within the application area was severely disturbed due to an adjacent railway line, and may even comprise historical rehabilitation and revegetation. As a result, the vegetation within the application area is not representative of an area of outstanding biodiversity in the Pilbara Bioregion.

Given its highly disturbed state, the application area would not likely be diverse in fauna species.

Based on the above, the proposed clearing may be at variance to this Principle. Given that it is not known whether the vegetation community within the Murray Camp Siding area constitutes part of the Wona Land System PEC it is possible that the clearing will impact on this Priority Ecological Community.

Methodology CALM (2002)
Pilbara Flora (2008)
Western Australian Herbarium (2011)
Western Australian Museum (2008)
GIS Database
- Pre-European Vegetation
- 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 116.25°E, 21.13°S and 117.26°E, 22.07°S, representing a 50 kilometre radius around the application area.

This search identified 6 Amphibian, 12 Fish, 25 Mammalian, 69 Avian and 69 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: Lakeland Downs Mouse (*Leggadina lakedownensis*); Star Finch (*Neochmia ruficauda subclarescens*), Rainbow Bee-Eater (*Merops ornatus*) and the skink *Notoscincus butleri*.

Pilbara Flora (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 20°31'S

- 21°45'S; 116°14'E. - 117°19'E. In addition to those species listed above, the following fauna species of conservation significance were identified through this database search: Northern Quoll (*Dasyurus hallucatus*); Orange Leaf-nosed Bat (*Rhinonictis aurantius*); Pilbara Olive Python (*Liasis olivaceus barroni*); Middle Robe Draculooides (*Draculooides Middle Robe*); Mesa K Paradraculooides (*Paradraculooides Mesa K*); Peregrine Falcon (*Falco peregrinus*); Little North-western Mastiff Bat (*Mormopterus loriae cobourgiana*); Blind snake (*Ramphotyphlops ganeii*); skink (*Lerista quadrivincula*); Dragonfly (*Antipodogomphus hodgkini*) and (*Nososticta pilbara*); Spectacled Hare-wallaby (*Lagorchestes conspicillatus leichardti*); Ghost Bat (*Macroderm gigas*); Western Pebble-mound Mouse (*Pseudomys chapmani*); Australian Bustard (*Ardeotis australis*); Bush Stonecurlew (*Burhinus grallarius*); Eastern Curlew (*Numenius madagascariensis*) and the Flock Bronzewing (*Phaps histrionica*).

Based on habitat requirements, the following species are most likely to occur within the application area:

The Northern Quoll (Endangered, Schedule 1) is known to occur in a range of habitats, including Eucalyptus open forest, monsoon rainforest and savannah woodland, but is most abundant (and apparently with less fluctuation) in rocky environments close to free water in creekline 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.

Middle Robe Draculooides and Mesa K Paradraculooides (Schedule 1) 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 found within the application area may provide significant habitat for these species.

The Peregrine Falcon (Schedule 4) is a wide ranging species that has little habitat specificity apart from an affinity with cliffs, tall trees for nesting and water (Pizzey and Knight, 1997). The vegetation within the application area provides suitable habitat for this species, however given that the vegetation types are well represented throughout the bioregion, its preference for riverine and breakaway habitats within the Pilbara and the small area proposed to clear (20 hectares) in relation to the size of the sub-region (9,044, 560 hectares) it is unlikely that the application area contains significant habitat for this species.

The Blind snake *Ramphotyphlops ganeii* (Priority 1) has been collected at opposite ends of the Pilbara uplands, hence the species may occur over a substantial geographic range (Aplin, 1998). The fact that it has not previously been collected from within the application area implies either a general scarcity or a very discontinuous distribution. Aplin (1998) 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.

Lerista quadrivincula (Priority 1) is known from a single specimen at the Maitland River on the arid coastal plain near Karratha (Wilson and Swan, 2003). This species has not been recorded again since its first sighting and as such its status and distribution remain uncertain. 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.

Lakeland Downs Mouse (Priority 4) is known to occur on sandy soils and cracking clays that support native grasses (DEC, 2008a). It is known that this species experiences great fluctuations in population size depending on seasonal factors, reaching plague proportions in good years (DEC, 2008a). The soil types of the application areas appear to be self - mulching cracking clays and gravely stony soils, and therefore the area is likely to contain suitable habitat for this species.

Notoscincus butleri (Priority 4) is a small skink that is considered endemic to the Pilbara (Morton et al, 1995). It has been located several times from the Hamersley Ranges and coastal Pilbara area (Western Australian Museum, 2008), commonly occurring in spinifex dominated areas adjacent to riparian habitats (Morton et al, 1995). 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, the vegetation within the application area is not likely to be significant habitat for this species.

The Western Pebble-mound Mouse (Priority 4) 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*. One inactive Pebble-mound Mouse mound was located within the application area during the fauna survey, and no active mounds were located (Pilbara Flora, 2008). It is possible that the vegetation within the application area may be significant habitat for this species.

The Australian Bustard (Priority 4) prefers tussock grassland, Triodia hummock grassland, grassy woodland and low shrub lands (Garnett and Crowley, 2000). This species has previously been recorded within the bioregion and so it is likely that the application area contains suitable habitat for this species. Given that the vegetation types are well represented throughout the bioregion and the small area proposed to clear (20 hectares) in relation to the size of the sub-region (9,044,560 hectares) it is unlikely that the application area contains significant habitat for this species.

The Bush Stone-curlew (Priority 4) is known to frequent lightly timbered open woodlands. The vegetation within the application area could provide suitable habitat for this species, however it is considered too open to offer sufficient cover for this species (Pilbara Flora, 2008). It is unlikely that the application area provides significant habitat for this species.

The Flock Bronzewing (Priority 4) has suffered a significant contraction in its range and a decrease in reporting rate. Flock Bronzewings are mainly found in open Mitchell Grass *Astrelba pectinata* grasslands on black soil plains, but also frequent saltbush Atriplex, bluebush Maireana and Triodia hummock grasslands, grassy woodlands, recently burnt areas, roadsides and agricultural land, particularly favouring run-on areas. They nest on bare ground, in the shelter of low vegetation and are often associated with permanent water (DEWHA, 2008). 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 Rainbow Bee-Eater (Migratory - JAMBA International Agreement) occurs mainly in open forests, woodlands and shrub lands but also occurs in inland and coastal sand dune systems and mangroves in Northern Australia (Western Australian Museum, 2008). This species is an opportunist and is known to inhabit a wide range of habitats (Pizzey and Knight, 1997). This species is likely to occur within the application area, however given that this species does not have a restricted range and the vegetation types that comprise its habitat are well represented throughout the bioregion it is unlikely that the application area contains significant habitat for this species.

Based on the above the proposed clearing may be at variance to this Principle due to the possible presence of significant habitat for the Middle Robe Draculoides and Mesa K Paradraculoides.

Methodology Aplin (1998)
Bamford Consulting Ecologists (2004)
Braithwaite et al. (1994)
DEC (2008a)
DEWHA (2008)
Firestone (1999)
Garnett and Crowley (2000)
Morton et al. (1995)
Pilbara Flora (2008)
Pizzey and Knight (1997)
Start et al. (2000)
Western Australian Museum (2008)
Wilson and Swan (2003)

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

Comments **Proposal is not likely to be at variance to this Principle**
There are no known records of Declared Rare Flora (DRF) species within the application area (GIS Database).

Rio Tinto botanists and Pilbara Flora botanists conducted a floristic survey of the application area in March 2007 and May 2008 respectively (Pilbara Flora, 2008). No DRF species were recorded during the flora survey.

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

Methodology DEC (2008b)
Pilbara Flora (2008)
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

A search of available databases reveals that there are no Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is located approximately 91 kilometres south-east (Themeda Grasslands) of the application area. At this distance it is unlikely that the proposed clearing will impact on this community.

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

Methodology DEC (2008c)
Pilbara Flora (2008)
GIS Database
- Threatened Ecological Sites Buffered

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is not at variance to this Principle

The application area falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). Shepherd (2009) report that approximately 99.89% of the pre-European vegetation still exists in this Bioregion. The vegetation in the application area is recorded as Beard vegetation associations:

173: Hummock grasslands, shrub steppe; kanji over soft spinifex & *Triodia wiseana* on basalt; and
175: Short bunch grassland - savannah/grass plain (Pilbara) (GIS Database; Shepherd, 2009). According to Shepherd (2009) there is approximately 100.0% and 99.99% respectively, of these vegetation types remaining within the Pilbara 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**	% of Pre-European area in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,193	17,784,001	~99.89	Least Concern	~6.32
Beard vegetation Associations - State					
173	1,421,376	1,421,376	~100.0	Least Concern	~4.82
175	526,206	524,861	~99.74	Least Concern	~4.22
Beard vegetation Associations - Bioregion					
173	1,420,793	1,420,793	~100.0	Least Concern	~4.82
175	507,036	507,006	~99.99	Least Concern	~4.38

* Shepherd (2009)

** 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 (2009)
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

According to known GIS datasets, there are no known watercourses or water bodies within the application area. There are numerous minor, non-perennial watercourses in proximity to the application area, however it is unlikely that the drainage lines would carry water under normal rainfall events, due to high evaporation rates and low rainfall (GIS Database).

The application area is located on an upland plateau between two major river systems, the Fortescue River approximately 11 kilometres to the north and the Robe River approximately 23 kilometres to the south-west (Pilbara Flora, 2008).

The application area experiences a rainfall of approximately 400 mm/year according to the nearest recording station at Pannawonica, located approximately 43 kilometres to the east (BOM, 2008). The application area also experiences a pan evaporation rate of approximately 3600 mm/year (Luke et al., 1987).

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 BOM (2008)
Luke et al. (1987)
Pilbara Flora (2008)
GIS Database
- Hydrography - Linear

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

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

The 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);

- Rocklea Land System
- Wona Land System

The Rocklea Land System is described as basalt hills, plateaux, lower slopes and minor stony plains 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 'Hill, ridge, plateau and upper slope', 'lower slope' and 'gilgai plains' land units of the Rocklea Land System. These land units are 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 (Pilbara Flora, 2008).

The Wona Land System is described as basalt upland gilgai plains supporting tussock grasslands and minor 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 'Stony gilgai upland plains' land unit of the Wona Land System. This land unit is not susceptible to erosion except if the stony mantle is removed as the stony nature of the surface material produces an erosion resistant mantle (Pilbara Flora, 2008).

Based on the above, the proposed clearing is not likely to be at variance to this Principle. Should a clearing permit be granted it is recommended that a condition be placed on the permit to require the permit holder to stockpile all topsoil and vegetation cleared for use in rehabilitation.

Methodology Pilbara Flora (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 application area is located approximately 25 kilometres to the 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
- Threatened Ecological Sites Buffered

(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), with the nearest PDWSA located approximately 9 kilometres south-east of the application area (GIS Database).

There are no permanent water bodies 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 400mm 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 3,600mm (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 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 within the Hamersley Groundwater Province (GIS Database). The groundwater salinity within the application area is approximately 500 - 1,000 milligrams/Litre Total Dissolved solids (TDS) (GIS Database). Given the size of the area to be cleared (20 hectares) compared to the size of the Hamersley Groundwater Province (10,166,833 hectares) (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)
GIS Database
- Public Drinking Water Sources Areas (PDWSAs)
- Hydrography, Linear
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Potential Groundwater Dependent Ecosystems

(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 receives low rainfall (approximately 400 mm/year) and is located in an upland catchment area surrounded by flat to slightly undulating land systems (Pilbara Flora, 2008; GIS Database), suggesting that the area is not likely to be subject to flooding.

The small area to be cleared (20 hectares) in relation to the size of the Fortescue River Catchment area (1,860,784 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 Pilbara Flora (2008)
GIS Database
- Topographic Contours, Statewide
- Hydrographic Catchments - 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*.

Several Aboriginal Sites of Significance occur within 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.

Clearing Permit CPS 2643/1 was granted by the Department of Industry and Resources on 9 October 2008 and was valid from 8 November 2008 to 31 July 2013. The clearing permit authorised the clearing of 20 hectares of native vegetation within a 69 hectare boundary. An application to amend the permit was received by the Department of Mines and Petroleum on 12 July 2011 requesting an increase in the boundary of the application area by 2.4 hectares.

Methodology GIS Database
- Aboriginal Sites of Significance
- Native Title Claims – Registered with the NNTT

4. References

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5. 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.