



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3152/1
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 1963, Mineral Lease 246SA (AML 70/246)*
Local Government Area: Shire Of Ashburton
Colloquial name: 4 West Waste Dump Expansion

1.4. Application

| | | | |
|---------------------------|------------------|---------------------------|----------------------------|
| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
| 2.4 | | Mechanical Removal | Waste Dump Expansion |

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 |
|--|---|--|--|
| <p>The vegetation of the application area is broadly mapped as Beard Vegetation Association 181: Shrublands; mulga and snakewood scrub and Beard Vegetation Association 163: Shrublands; Eremophila and Cassia dwarf scrub (GIS Database; Kendrick, 2001a; Kendrick, 2001b).</p> <p>A flora and vegetation survey of the application area was undertaken by botanists from Pilbara Iron during November 2008. The following vegetation types were recorded within the application area (Rio Tinto, 2009):</p> <p>1) Stony Undulating Plain: <i>Grevillea berryana</i>, <i>Acacia aneura</i> var. <i>aneura</i> scattered tall shrubs over <i>Acacia synchronicia</i>, <i>Eremophila cuneifolia</i>, <i>Senna glutinosa</i> subsp. <i>leurrssenii</i> shrubland over <i>Ptilotus obovatus</i>, <i>Lepidium platypetalum</i> low shrubland over <i>Cenchrus ciliaris</i>, <i>Enneapogon caerulescens</i> open tussock grassland.</p> <p>2) <i>Acacia citrinoviridis</i> Minor Creekline: <i>Acacia citrinoviridis</i>, <i>Grevillea berryana</i> tall open shrubland over <i>Acacia wanyu</i>, <i>Acacia tetragonophylla</i> open shrubland over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> low scattered shrubs over <i>Cenchrus ciliaris</i> very open tussock grassland.</p> <p>3) Disturbed Ground: Low scattered shrubs of disturbance opportunists including <i>Acacia synchronicia</i>, <i>Senna artemisioides</i> subsp. <i>artemisioides</i> and <i>Lepidium platypetalum</i>.</p> | <p>Hamersley Iron Pty Ltd has applied to clear up to 2.4 hectares of native vegetation with an application area of 6.7 hectares for their 4 West waste dump extension. The proposal is to be situated at the Paraburdoo mine site, which is approximately 10 kilometres south west of the township of Paraburdoo in the central southern part of the Pilbara region (GIS Database; Rio Tinto, 2009). Clearing will be required for the extension of the western side of the 4 West waste dump, as the current capacity is approaching its limits. To prepare the site as a waste dump, all existing vegetation in the application area will be cleared, and top soil removed and stored outside the study area in approved top soil stockpiles for use in later rehabilitation (Rio Tinto, 2009).</p> | <p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994)</p> | <p>The vegetation conditions were derived from descriptions by Rio Tinto (2009).</p> |

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 clearing application area is located within the Hamersley subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara Bioregion and the Ashburton subregion of the IBRA Gascoyne Region (GIS Database). The vegetation of the application area consists of two vegetation associations (Hamersley 181 and Ashburton 163), both of which are common and widespread throughout the region, with approximately 100% of the pre-European vegetation remaining (Shepherd et al., 2007).

The application area is located within close proximity to existing mine operations and also adjacent to existing roads (GIS Database). The application area has also been extensively cleared at various times in the past and numerous vehicle tracks traverse the site. Due to the disturbance history of the application area, biological diversity was found to be relatively low (Rio Tinto, 2009). Isolated clumps of Buffel Grass (*Cenchrus ciliaris*) were common in both vegetation communities identified within the application area (Rio Tinto, 2009). According to Rio Tinto (2009), vegetation within the proposed clearing was generally poor to very poor based on Trudgen's (1988) vegetation condition scale.

Pilbara Iron conducted flora and fauna surveys of the application area in November 2008. A total of 42 plant taxa were identified within the study area from 25 genera belonging to 20 plant families (Rio Tinto, 2009). It was found that Family and Genus diversity and composition were typical for the Pilbara and Gascoyne bioregions. No flora or fauna species of conservation significance, restricted vegetation types or significant fauna habitat features were recorded within the application area (Rio Tinto, 2009).

The small size of the proposed clearing found adjacent to existing disturbed areas, is unlikely to have any significant impact on the biological diversity of the application area or region.

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

Methodology

Rio Tinto (2009)
Shepherd et al. (2007)
GIS Database:
-Interim Biogeographic Regionalisation of Australia
-Interim Biogeographic Regionalisation of Australia (Subregions)
-Paraburdoo 50 cm Orthomosaic - Landgate 2004
-Pre European vegetation

(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

Rio Tinto (2009) describes fauna habitat within the application area as a stony undulating plain of mixed Acacia and Senna shrubs over low shrubs and very sparse cover of Buffel Grass (*Cenchrus ciliaris*). Two minor creek lines also traverse the site and provide a narrow band of Acacia tall open shrubland within which large woody debris is common (GIS Database; Rio Tinto, 2009). Both the stony plain habitat and the minor creek line habitats are well represented outside the application area and in the greater Paraburdoo region (Rio Tinto, 2009; Payne et al., 1988).

No targeted fauna surveys were undertaken in the proposed clearing, although incidental sightings were recorded and available habitats noted. A review of databases held by the Department of Environment and Conservation (DEC), Department of the Environment, Water, Heritage and the Arts (DEWHA), *Environmental Protection and Biodiversity Conservation (EPBC) Act, 1999*, Western Australian Museum and Pilbara Iron identified 13 species of conservation significance as potentially occurring within the application area (Rio Tinto, 2009).

Of the thirteen conservation significant fauna species, three have been classed as being either endangered or vulnerable:

- Northern Quoll (*Dasyurus hallucatus*), Schedule 1 (Wildlife Conservation [Specially Protected Fauna] Notice 2008) and endangered (EPBC Act) fauna species;
- Pilbara Orange Leaf-nosed Bat (*Rhinonictis aurantius*), Schedule 1 (Wildlife Conservation [Specially Protected Fauna] Notice 2008) and vulnerable (EPBC Act) fauna species;
- Pilbara Olive Python (*Liasis olivaceus barroni*) Schedule 1 (Wildlife Conservation [Specially Protected Fauna] Notice 2008) and vulnerable (EPBC Act) fauna species (Rio Tinto, 2009).

No conservation significant fauna were recorded during the survey and it is unlikely the proposed clearing would have a significant impact on these species due to: availability of similar or better foraging habitat outside the application area; no suitable roost habitat; and no permanent water sources available within the application area (GIS Database; Rio Tinto, 2009). An assessment of each of the thirteen species identified, found that habitat within the proposed clearing was restricted to marginal foraging habitat. The application area did not contain 'core habitat' for any of these species.

Riparian woodland habitat occurs approximately 200 metres to the west of the application area, within Pirraburdu Creek (Rio Tinto, 2009). The proposal is not likely to impact on the riparian vegetation within Pirraburdu Creek, due to the area of vegetation to be cleared being small and already disturbed and therefore unlikely to exacerbate erosion, weed infestation or to alter hydrological regimes (Rio Tinto, 2009). No other significant fauna habitats such as caves, rock piles, waterholes, termite mounds or sandy banks were observed within the application area.

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

Methodology Payne et al. (1988)
Rio Tinto (2009)
GIS Database:
-Hydrography, Linear
-Paraburdoo 50 cm Orthomosaic - Landgate 2004
-Threatened Fauna

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

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

According to available datasets there are no known records of Declared Rare Flora (DRF) or Priority flora species within the clearing application area (GIS Database).

The entire application area was traversed by two botanists from Pilbara Iron on the 18th November, 2008. No DRF or Priority flora were observed within the proposed clearing (Rio Tinto, 2009).

A total of 15 Priority flora species have been identified as existing in the greater Paraburdoo area after searches through the Department of Environment and Conservation (DEC), EPBC Act and Western Australian Herbarium flora databases (Rio Tinto, 2009). Of these only one species was considered to potentially occur within the application area based on available habitat; *Ptilotus trichocephalus* a Priority One - poorly known taxa (Rio Tinto, 2009).

Ptilotus trichocephalus has been recorded from numerous locations with 12 known records in the Western Australian Herbarium database and a further seven records from DEC Threatened Flora database (Rio Tinto, 2009). Records range from the Paraburdoo Mine area and surrounding flats to approximately 70 kilometres south of Paraburdoo. Given that this species is represented by numerous nearby populations and that the habitat for the species within the proposed clearing is degraded, the proposal is unlikely to impact the conservation status of this species.

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

Methodology Rio Tinto (2009)
GIS Database:
-Clearing Regulations - Schedule One
-Declared Rare and Priority Flora List
-Pre European Vegetation
-Towns

(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) within or in the vicinity of the application area (GIS Database; Rio Tinto, 2009). The nearest known TEC is located approximately 90 kilometres north-east of the application area (GIS Database). Given the distance between the proposal and the nearest known TEC, the proposed clearing is not likely to impact on the conservation of the TEC.

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

Methodology Rio Tinto (2009)
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 is located within the Pilbara and Gascoyne Bioregions of the Interim Biogeographic Regionalisation of Australia (IBRA) (GIS Database). Shepherd et al. (2007) report that approximately 99.95%

of the pre-European vegetation still exists in the Pilbara Bioregion whilst 100% remains in the Gascoyne Bioregion. The vegetation in the application area is broadly mapped as Beard Vegetation Associations 181: Shrublands; mulga and snakewood scrub and 163: Shrublands; Eremophila and Cassia dwarf scrub (GIS Database; Kendrick, 2001a; Kendrick, 2001b). According to Shepherd et al., (2007) there is approximately 100% of these vegetation types remaining at both State and Bioregion scales (see table below).

According to the Bioregional Conservation Status of Ecological Vegetation Classes the conservation status for the Pilbara and Gascoyne Bioregions and Beard vegetation associations 181 and 163 is of "Least Concern" (Department of Natural Resources and Environment, 2002).

Although several large scale mining operations are located within a 50 kilometre radius of the application area, the Pilbara and Gascoyne Bioregions remain largely uncleared (GIS Database). As a result, the conservation of the vegetation associations within the bioregion are not likely to be impacted upon by the proposal.

| | Pre-European area (ha)* | Current extent (ha)* | Remaining %* | Conservation Status** | Pre-European % in IUCN Class I-IV Reserves |
|------------------------------|-------------------------|----------------------|--------------|-----------------------|--|
| IBRA Bioregion - Pilbara | 17,804,188 | 17,794,647 | ~99.95 | Least Concern | 6.32 |
| IBRA Bioregion - Gascoyne | 18,075,253 | 18,075,253 | ~100 | Least Concern | 1.9 |
| Beard veg assoc. - State | | | | | |
| 163 | 641,918 | 641,918 | ~100 | Least Concern | 0.0 |
| 181 | 1,697,291 | 1,697,291 | ~100 | Least Concern | 2.4 |
| Beard veg assoc. - Bioregion | | | | | |
| 163 | 640,581 | 640,581 | ~100 | Least Concern | 0.0 |
| 181 | 65,091 | 65,091 | ~100 | Least Concern | 4.9 |

* Shepherd et al. (2007)

** 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)
Kendrick (2001a)
Kendrick (2001b)
Shepherd et al. (2007)
GIS Database:
-Interim Biogeographic Regionalisation of Australia
-Paraburdoo 50 cm Orthomosaic - Landgate 2004 (Image)
-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 wetlands or watercourses within the area applied to be cleared (GIS Database; Rio Tinto, 2009). Two minor ephemeral drainage lines traverse the application area, which may result in the loss of vegetation associated with a watercourse (GIS Database). However, both drainage lines are already disturbed with dense infestations of Buffel Grass, altered hydrological regimes caused by extensive mining activities within their catchment and increased fine sediment deposition from waste dump runoff (Rio Tinto, 2009). The proposal is unlikely to further increase disturbance along these drainage lines.

The closest watercourse of significance to the application area is Pirraburdu Creek which is located approximately 200 metres from the western extent of the study area (GIS Database). The proposal is unlikely to alter or increase the current disturbance regime acting on this creek, although sediment control procedures are to be implemented in the drainage lines so as to minimise impacts on the watercourse (Rio Tinto, 2009).

As there are watercourses within the application area, the proposed clearing is at variance to this Principle. However, the watercourses traversing the study area are minor, natural drainage channels that are widespread across the Pilbara landscape (GIS Database) and are responsible for quickly dispersing floodwaters after significant rainfall events. These watercourses are already disturbed and vegetation communities growing in

association with the watercourses are not unique and are considered common and widespread in the Pilbara bioregion (GIS Database; Rio Tinto, 2009; Shepherd et al., 2007). The proposed clearing is unlikely to significantly impact on vegetation communities growing in association with these minor ephemeral creek systems.

Methodology Rio Tinto (2009)
Shepherd et al. (2007)
GIS Database:
-Hydrography, Lakes (Course Scale, 1m GA)
-Hydrography, Linear (Hyd_Type)
-Paraburdoo 50 cm Orthomosaic - Landgate 2004
-Rivers

(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 consists of the Ethel and Newman Land Systems (GIS Database).

The Newman Land System consists of rugged jaspilite plateaux, ridges, mountains and hills supporting hard spinifex grasslands which typify much of the Pilbara (Rio Tinto, 2009; Payne et al., 1988). The Newman land System is comprised of four landform units: Plateaux, Ridges, Mountains and Hills; Lower Slopes; Stony Plains; and Narrow Drainage Floors with Channels. Approximately 21% of the application area is located within the Newman Land System, of which the majority of the vegetation appears to occur on the landform unit stony plains (Rio Tinto, 2009). Stony plains consist of gently undulating lower plains and interfluves of up to 500 metres in extent with mantles of abundant to very abundant pebbles of ironstone (Rio Tinto, 2009). Due to the high occurrence of mantles with abundant ironstone pebbles, this land system has a strong resistance to erosion.

The Ethel Land System makes up 79% of the study area and can be described as highly dissected plains and slopes with sparse mulga shrublands, with it geologically consisting of partly consolidated and cemented tertiary colluvium (Payne et al., 1988). The Ethel Land System is comprised of five landform units: Low Hills and Stony Rises; Raised Cobble Plains; Saline Plains; Drainage Floors; and Braided Channels (Payne et al., 1988). According to Rio Tinto (2009), the land unit Raised Cobble Plains was the dominant landform within the area and consists of gently undulating stony surfaces and interfluves, up to four kilometres long by one kilometre wide with gradients 1:100 or less and with dense colluvial mantle. The soils are likely to have high resistance to erosion due to the stony nature of the surface materials.

Groundwater salinities in the area have been measured in a range from 500 to 1000 milligrams per litre Total Dissolved Solids (TDS) (GIS Database). The mean average rainfall in the area is approximately 280 millimetres per year and an average annual pan evaporation rate of between 3200-4000 millimetres (Eberhard et al., 2004). Given the small size of the proposed clearing in relation to the low rainfall to high evaporation rate in the area, it is unlikely that land salinisation will be increased on or off site.

The clearing of vegetation is unlikely to cause appreciable land degradation in the proposed clearing as much of the application area is already significantly degraded due to vegetation clearing and weed invasion. There is potential to increase land degradation in the area immediately to the west of the study area through increased siltation and dust transport, however, control procedures along the toe of the extended waste dump will help minimise any risk of land degradation associated with the proposal (Rio Tinto, 2009).

Should a clearing permit be granted, it is recommended that conditions be placed on the permit for the purposes of weed management and rehabilitation.

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

Methodology Eberhard et al. (2004)
Payne et al. (1988)
Rio Tinto (2009)
GIS Database:
-Groundwater Salinity, Statewide
-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 not situated within a Department of Environment and conservation managed conservation area (GIS Database). The nearest conservation estate is Karijini National Park, which is situated approximately 40 kilometres east of the application area (GIS Database). Based on the distance between the proposal and the nearest conservation area, the proposed clearing is not likely to impact on the conservation

values of Karijini National Park.

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

Methodology GIS Database:
-CALM Managed Lands and Waters (Category)

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

The application area is located in a semi-desert-tropical region, within the Ashburton River catchment. The Paraburdoo area has an average annual rainfall of approximately 280 millimetres (Bureau of Meteorology, 2009) falling mainly during the summer months, although rainfall may vary widely from year to year (ANRA, 2007). With an annual average pan evaporation rate of 3200-4000 millimetres, the presence of surface water resulting from significant rain events is relatively short lived (Eberhard et al., 2004).

There are no permanent watercourses or wetlands within the application area (GIS Database; Rio Tinto, 2009). The closest watercourses of significance are Pirraburdu Creek which is approximately 200 metres west, Seven Mile Creek which is approximately one kilometre south and Turee Creek which is located approximately 18.5 kilometres south-east of the application area. None of these watercourses are perennial. The two land systems associated with the application area have a high resistance to erosion (Rio Tinto, 2009; Payne et al. 1988), however it is likely that existing surface water quality within the minor drainage lines traversing the site has been affected by runoff from the 4 West waste dump and previous clearing of the site (Rio Tinto, 2009).

Pirraburdu and Seven Mile Creek are primary sources for recharging groundwater levels in the area (Rio Tinto, 2009). Groundwater levels fluctuate according to mine operations and seasonal recharge variations. While extraction of groundwater for mine operations and dewatering causes the water level to be drawn down, monitoring suggests there has been no long term decline in overall aquifer levels at 4 West (Rio Tinto, 2009). Given the small size of the proposed clearing, it is unlikely the proposal would have an impact on groundwater quality or groundwater recharge.

The application is not located within a Public Drinking Water Source Area (GIS Database).

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

Methodology ANRA (2007)
Bureau of Meteorology (2009)
Eberhard et al. (2004)
Rio Tinto (2009)
GIS Database:
-Hydrography, Lakes (Course Scale, 1m GA)
-Hydrography, Linear (Hyd_Type)
-Public Drinking Water Source Areas (PDWSA's)
-Rivers

(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

There are no permanent wetlands or watercourses associated within the application area (GIS Database; Rio Tinto, 2009). Two minor ephemeral drainage lines traverse the proposed clearing running east to west across the application area (GIS Database). These creeks converge approximately one kilometre west of the study area into the Pirraburdu Creek, a minor non-perennial water course that runs broadly in a south-west direction to its confluence with Seven Mile Creek approximately 12 kilometres from the proposed clearing (Rio Tinto, 2009). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall (ANRA, 2007; Rio Tinto, 2009).

The Paraburdoo area has an average annual rainfall of approximately 280 millimetres per annum, although rainfall may vary widely from this average (Bureau of Meteorology, 2009). Most rainfall is received during the wet season (December to March), but falls continue until June, with a pronounced dry period between August and November (ANRA, 2007). Rain can either be sporadic (local thunderstorms) or heavy and intense (cyclonic events). Due to the pindan soils found in the area, soil saturation occurs quickly in heavy rainfall, which results in overland sheet flow (Burnside et al., 2007). It is expected that Pirraburdu Creek will flood after periods of heavy rain. With average annual evaporation ranging from 3200-4000 millimetres, compared to the 280 millimetres of rain per year, any flooding or overland flow is likely to be of short duration (ANRA, 2007; Eberhard et al., 2004). Given the small size of the area to be cleared relative to the Pirraburdu Creek catchment, it is unlikely that the proposal will alter the frequency or intensity of flooding (GIS Database; ANRA, 2007).

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

Methodology ANRA (2007)
Bureau of Meteorology (2009)
Burnside et al. (2007)
Eberhard (2004)
Rio Tinto (2009)
GIS Database:
-Hydrography, Linear (Hyd_Type)
-Hydrography, Lakes (Course Scale_1M_GA)

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

Comments

There are two native title claims over the area under application; WC97/043 and WC98/069. These claims have been registered with the National Native Title Tribunal on behalf of the claimant groups. 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 (ie. 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). 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.

One submission was received, raising no objection to this proposal.

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.

Methodology GIS Database:
-Aboriginal Sites of Significance
-Native Title Claims

4. Assessor's comments

Comment

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

5. References

- ANRA (2007) Australian Natural Resources Atlas: Rangelands overview; Pilbara. Available online from: <http://www.anra.gov.au/tropics/rangelands/overview/wa/ibra-pil.html> Accessed 02 July, 2009.
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- Kendrick, P. (2001b) Gascoyne 1 (GAS1 - Ashburton subregion). In a Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management, pp 568-580.
- Payne, A.L., Mitchell, A.A., and Holman, W.F. (1988) Technical Bulletin; An inventory and condition survey of rangelands in the Ashburton River catchment, Western Australia. Department of Agriculture, Western Australia.
- Rio Tinto (2009) 4 West Waste Dump Extension, Paraburdoo. Native Vegetation Clearing Permit Report (Purpose Permit). Rio Tinto, Western Australia.
- Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2007) Native Vegetation in Western Australia, Extent, Type and Status.

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. |
| DMP | Department of Mines and Petroleum, 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] :-

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|-------------------|--|
| 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.