Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5918/1
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, Mining Lease 272SA (AM 70/272)
Miscellaneous Licence 47/18
Miscellaneous Licence 47/55
Miscellaneous Licence 47/223
Miscellaneous Licence 47/100
Local Government Area: Shire of Ashburton
Colloquial name: Tom Price to Juna Downs Transmission Line Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
48.3		Mechanical Removal	Infrastructure Maintenance

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 23 January 2014

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 and are useful to look at vegetation in a regional context. The following Beard vegetation associations are located within the application area (GIS Database):

18: Low woodland; mulga (*Acacia aneura*)
29: Sparse low woodland; mulga, discontinuous in scattered groups
82: Hummock grasslands, low tree steppe; snappygum over *Triodia wiseana*; and
567: Hummock grasslands, shrub steppe; mulga and kanji over soft spinifex & *Triodia basedowii*.

Vegetation mapping units within the study area are based on Biota (2008a) and an inspection of high-resolution aerial imagery to validate boundaries between vegetation associations and previously cleared or disturbed areas present. The following vegetation units were identified:

Units within Clay Plains:
AanAprApaAriTm: *Acacia aneura, A. pruinocarpa* low open woodland over *A. pachyacra* scattered shrubs over *Aristida ingrata* tussock grassland and *Triodia melvillei* hummock grassland;

Units within Stony Plains:
AprAanTspsTw: *Acacia pruinocarpa, A. aneura* tall open shrubland over *Triodia* sp. Shovelanna Hill, *T. wiseana* hummock grassland;

AprAaAbTw: *Acacia pruinocarpa, A. aneura, A. bivenosa* tall open shrubland over *Triodia wiseana* open hummock grassland;

ElAanAatTwTsps: *Eucalyptus leucophloia* low open woodland over *Acacia atkinsiana, A. aneura* open shrubland over *Triodia wiseana, Triodia* sp. Shovelanna Hill hummock grassland;

ElAanTw: *Eucalyptus leucophloia* scattered low trees over *Acacia aneura* tall open shrubland over *Triodia wiseana* hummock grassland;

ElAatTaTlo: *Eucalyptus leucophloia* low open woodland over *Acacia atkinsiana* scattered shrubs over *Triodia angusta, T. longiceps* hummock grassland;

EsTw: *Eucalyptus socialis* low open mallee woodland over *Triodia wiseana* hummock grassland;

Units within Drainage Areas:
AanTmTHtCHf: *Acacia aneura* low open forest over *Triodia melvillei* open hummock grassland and *Themeda triandra*, *Chrysopogon fallax* tussock grassland;

EvAciTHtCEsTe: *Eucalyptus victrix, Acacia citrinoviridis* low open forest over Themeda triandra, *Ce*nchrus setige*r tussock grassland and *Triodia epactia* open hummock grassland.

A Level 1 Vegetation, Flora and Fauna survey by Astron Environmental Services (AES) (AES, 2013) identified one vegetation association within the separate western portion of the application area;

Acacia aptaneura, A. inaequilatera and *A. pruinocarpa* scattered shrubs to tall shrubland over *Senna artemisioides* subsp. *helmsii* scattered low shrubs to scattered tall shrubs over *Themeda triandra* and *Chrysopogon fallax* open tussock grassland to tussock grassland.

Clearing Description

Tom Price to Juna Downs Transmission Line Project.
Hamersley Iron Pty Ltd has applied to clear up to 48.3 hectares of native vegetation within a total boundary of approximately 48.3 hectares, for the purpose of repair and maintenance of a transmission line and associated works. The proposed clearing is located approximately 11.5 kilometres north east of Tom Price, in the Shire of Ashburton.

Vegetation Condition

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

to

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

Comment

Mapped vegetation associations within the application area are based on Biota (2008a), aerial imagery (RTIO, 2013a), and a field survey conducted by Astron Environmental Services in September 2013 (AES, 2013). As the application to clear vegetation is for the purpose of repair and maintenance of existing infrastructure, a majority of the application area has been subject to previous clearing or disturbance.

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

A field survey was conducted over the western portion of the application area (1.25 of 48.3 hectares) on 10 – 12 September 2013 by Astron Environmental Services (AES) (AES, 2013). Given that the clearing purpose is for the repair and maintenance of existing infrastructure, a desktop analysis has been utilised to assess the remaining area, conducted by Rio Tinto Iron Ore Pty Ltd (RTIO) (RTIO, 2013a). The application area has been included within the study area of four previous field surveys, including:

(i) A vegetation and Flora Survey of the Rio Tinto Rail Duplication – Bellbird Siding to Juna Downs (Biota, 2008a)
(ii) Rio Tinto Rail Duplication Fauna Assessment: Bellbird Siding to Juna Downs (Biota, 2008b)
(iii) Karijini Transmission Corridor Level 1 Vegetation, Flora and Fauna Survey (AES, 2013), and
(iv) Rare Flora Survey of the Tom Price to Yandi Powerline (RTIO, 2001).

The vegetation within the application area is mapped as belonging to Beard vegetation associations 18, 29, 82 and 567 (GIS Database). Together, Biota (2008a) and AES (2013) identified a total of ten vegetation units within the application boundary which range from Degraded to Good condition (Keighery, 1994). Four weed species were identified during the field survey conducted by AES, including *Bidens bipinnata* (Bidens) *Cenchrus setiger* (Birdwood Grass), *Malvastrum americanum* (Spiked Malvastrum), and *Portulaca oleracea* (Purslane) (AES, 2013).

No vegetation associations belonging to a Threatened Ecological Community (TEC) were identified within the survey area during flora and vegetation assessments (AES, 2013). These findings concur with desktop assessments and available databases (RTIO, 2013a; GIS Database). The proposed clearing lies within the boundary of a Priority 1 sub-type of the Coolibah-lignum flat Priority Ecological Community (PEC) (RTIO, 2013a; GIS Database). This sub-type is comprised of Coolibah woodland over lignum and silky browntop (*Eulalia aurea*), and is one of two known occurrences situated on the Mount Bruce Flats (DEC, 2013). Threats to this PEC include dewatering processes, grazing, and vegetation clearing associated with infrastructure corridors, such as that proposed by the applicant (DEC, 2013). However, none of the vegetation units identified to occur within the application area represent a Coolibah-lignum flat (Biota, 2008a; RTIO, 2013a), and it is possible that the intersecting area represents a buffer zone.

No Priority or Threatened Flora were identified during the field survey by AES (AES, 2013). Three Priority species are considered likely to occur within the application area; *Rostelularia adscendens* var. *latifolia* (P3), *Goodenia lyrata* (P3), and *Goodenia nuda* (P4) (RTIO, 2013a). None of these species are subject to limited distributions or habitat specificity (RTIO, 2013a). Using a ten kilometre buffer around the application boundary, Naturemap returned records for 496 flora species (DEC, 2014). This estimate of species richness does not take into account areas which have been previously disturbed, and is not considered to represent an area of significant floristic biodiversity.

Two fauna habitats, stony plains and creeks, are expected to occur within the application area (RTIO, 2013a). However, these habitats show signs of anthropogenic disturbance where tower pads and tracks are pre-existing (RTIO, 2013a). Although creek habitat is thought to have moderate conservation significance due to the presence of large trees, both habitat types are well represented in the local area and the region (RTIO, 2013a).

A field-based fauna assessment has not been conducted throughout the entire application area. A review of fauna records within the application area using Naturemap (DEC, 2014), returned records from 24 mammal, 102 bird, 76 reptile and five amphibian species within a ten kilometre buffer.

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

Methodology

AES (2013)
Biota (2008a)
Biota (2008b)
DEC (2013)
DEC (2014)
Keighery (1994)
RTIO (2001)
RTIO (2013a)
GIS Database:
- Pre-European vegetation
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

(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

Two fauna habitat types were identified within the application area, including:

(i) stony plains supporting mulga (*Acacia aneura*) woodlands or mixed *Acacia* shrublands over spinifex grasslands (AES, 2013; RTIO, 2013a), and

(ii) creeks supporting open woodlands of coolibah (*Eucalyptus victrix*) over mixed shrubs and tussock grasslands (RTIO, 2013a).

Naturemap records within a ten kilometre buffer of the application area reveal that the application area may provide habitat for 24 mammal, 102 avian, 76 reptile and five amphibian species (DEC, 2014). These include conservation significant species such as the Northern Quoll (*Dasyurus hallucatus*; Threatened), Pilbara Olive Python (*Liasis olivaceus* subsp. *barroni*; Threatened), Rainbow Bee-eater (*Merops ornatus*; Migratory), Barking Owl (*Ninox connivens* subsp. *connivens*; Priority 2), Australian Bustard (*Ardeotis australis*; Priority 4), Ghost Bat (*Macroderma gigas*; Priority 4), and Western Pebble-mound Mouse (*Pseudomys chapmani*; Priority 4) (DEC, 2014). A field survey was conducted over the separate 1.25 hectare western portion of the application area by Astron Environmental Services (AES, 2013). Fauna were surveyed using opportunistic observations, and 21 avian, four mammal and three reptile species were recorded in total (AES, 2013). No species recorded were Priority or Threatened fauna.

The two habitat types within the application area are well represented in the region, and are unlikely to function as significant foraging or denning habitat due to the absence of important microhabitats such as caves or semi-permanent/ permanent waterbodies (RTIO, 2013a). The most likely function of the habitat within the application boundary is as a dispersal corridor for fauna moving across the transmission line (RTIO, 2013a).

The creek habitat type is of moderate significance in the region due to the presence of large trees (RTIO, 2013a). A total of 0.09 hectares within the application area falls within creek habitat (RTIO, 2013a). RTIO (2013a) have advised that none of the trees within the application boundary represent significant trees within the creek habitat, and that numerous large trees occur outside the application boundary.

Between 28 and 33 trees growing under or adjacent to the transmission line will be completely or partially cleared in order to maintain safe conditions (RTIO, 2013a). Astron have advised that while one tree contains a hollow that may provide shelter or nesting habitat (AES, 2013), it is currently not in use by any fauna species (RTIO, 2013b). Hamersley Iron Pty Ltd has stated that where possible trees will be trimmed, however in some cases trees will require clearing due to the associated fire risk (RTIO, 2013b).

Given that both habitat types within the application boundary have been previously disturbed, and are unlikely to represent significant habitat for fauna, the proposed clearing is not likely to be at variance to this Principle.

Methodology

AES (2013)
DEC (2014)
RTIO (2013a)
RTIO (2013b)

(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, there are no records of Threatened Flora within a ten kilometre radius of the application area (DEC, 2014; GIS Database). A field-based flora and vegetation survey was conducted from 10 – 12 September 2013 by Astron Environmental Services (AES) across the separate western portion of the application area. No Threatened flora were recorded (AES, 2013). RTIO (2013A) advise that while *Lepidium catapycnon* (Threatened) has been recorded in the wider region, it has not been recorded in either of the four field surveys that have previously covered the application area. Due to its conspicuous stem structure, it is considered unlikely that this flora would be undetected if it were present (RTIO, 2013a).

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

Methodology

AES (2013)
DEC (2014)
RTIO (2013a)
GIS Database:
- Threatened and Priority Flora

(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, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is approximately 33 kilometres north, north west of the application area and is a Themeda grassland on cracking clays (GIS Database).

The vegetation survey over a portion of the application area did not record any TECs (RTIO, 2013a).

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

Methodology

RTIO (2013a)
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 Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.6% of the pre-European vegetation remains (see table) (Government of Western Australia, 2013; GIS Database).

The vegetation of the application area has been mapped as the following Beard vegetation associations (GIS Database):

18: Low woodland; mulga (*Acacia aneura*)
29: Sparse low woodland; mulga, discontinuous in scattered groups
82: Hummock grasslands, low tree steppe; snappygum over *Triodia wiseana*; and
567: Hummock grasslands, shrub steppe; mulga and kanji over soft spinifex & *Triodia basedowii*.

Approximately 99.8% of Beard vegetation association 18, 99.95% of Beard vegetation association 29, 99.5% of Beard vegetation association 82 and 99.7% of Beard vegetation association 567 remains at both a state and bioregional level (Government of Western Australia, 2013). Based on aerial imagery, the vegetation within the application area is neither a remnant itself nor does it form part of any remnants within the local area (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Lands
IBRA Bioregion – Pilbara	17,804,427	17,729,352	~99.6	Least Concern	6.3
Beard veg assoc. – State					
18	19,892,305	19,843,727	~99.8	Least Concern	6.3
29	7,903,991	7,900,200	~99.95	Least Concern	5.2
82	2,565,901	2,553,217	~99.5	Least Concern	10.2
567	777,507	774,896	~99.7	Least Concern	22.3
Beard veg assoc. – Bioregion					
18	676,557	672,424	~99.39	Least Concern	17.2
29	1,133,220	1,132,939	~99.98	Least Concern	2.0
82	2,563,583	2,550,899	~99.5	Least Concern	10.2
567	776,824	774,213	~99.7	Least Concern	22.4

* Government of Western Australia (2013)
** 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)
Government of Western Australia (2013)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- Mount Bruce 50cm Orthomosaic – Landgate 2004
- 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

The application area intersects numerous minor, non-perennial watercourses including Turee Creek, and runs adjacent to an area subject to inundation (GIS Database). Aerial imagery indicates that vegetation growing along these watercourses is riparian in nature (GIS Database). Two riparian vegetation units have been described by Biota (2008a), including AanTmTHtCHf and EvAciTHtCEsTe. Biota (2008a) advise that EvAciTHtCEsTe holds moderate conservation value as it represents good quality, mature creekline vegetation with minimal weed invasion.

A small portion of existing infrastructure associated with the transmission line (0.09 hectares) already occurs within this vegetation unit (RTIO, 2013a). However, the proposed clearing activities consist of clearing for repair and maintenance purposes only, and Rio Tinto will avoid clearing any intact native vegetation that has not been previously disturbed (RTIO, 2013a). Further impacts to riparian vegetation as a result of the proposed clearing are therefore limited.

Based on the above, the proposed clearing is at variance to this Principle.

Methodology Biota (2008a)
RTIO (2013a)
GIS Database:
- Hydrography, linear
- 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 55 kilometre length of the application area intersects with seven land systems; the Boolgeeda land system, Jurrawarrina land system, Marandoo land system, Newman land system, Platform land system, Table land system, and the Wannamunna land system (GIS Database). Most of these land systems consist of stony soils and hard clays, and are relatively resistant to soil erosion (Van Vreeswyk et al., 2004). A small proportion of the Jurrawarrina land system is subject to a high degree of soil erosion (Van Vreeswyk et al., 2004).

Clearing under this application will occur within existing track windrows and around pre-existing infrastructure (RTIO, 2013a). Therefore, it is unlikely that further land degradation will occur as a result of the proposed clearing.

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

Methodology RTIO (2013a)

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 lies within the Karijini National Park, which is listed on the Register of National Estate and is therefore considered to be an Environmentally Sensitive Area (GIS Database). However, the application area lies outside of the present National Park tenure boundary, and instead falls within an Infrastructure Corridor vested in the Conservation Commission of Western Australia which crosses through the National Park (GIS Database).

A number of weed species in the Pilbara have the potential to increase in abundance and/or distribution following disturbance (DEC, 2001). Invasive flora species can decrease the biodiversity value of an area, as they out-compete native vegetation for available resources, contribute to land degradation and increase the frequency and intensity of fires (DEC, 2011). Potential impacts to biodiversity within and nearby the application area as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Given that the application is for the purpose of repair and maintenance of pre-existing infrastructure, the proposed clearing is not likely to have any further impacts on the environmental values of Karijini National Park.

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

Methodology

DEC (2001)
DEC (2011)
GIS Database:
- DEC Tenure

(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

Numerous minor, non-perennial watercourses are intersected by the application area, and an area subject to inundation lies along the northern border of the existing transmission line (GIS Database). Furthermore, a small portion of an access track within the application area (approximately 272 metres in length) intersects the edge of the Marandoo Water Reserve, a Public Drinking Water Source Area (PDWSA) (GIS Database).

If riparian vegetation is cleared, some short term, localised sedimentation of watercourses may occur during periods of rainfall, but this is unlikely to decrease the quality of surface water. As clearing under this permit will be limited to the removal of regrowth vegetation around existing tracks and tower pads, the proposed clearing is not expected to impact the quality of the water reserve or result in any further deterioration in groundwater quality in the local area.

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

Methodology

GIS Database:
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

(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

Mean annual rainfall in Tom Price is approximately 384 millimetres (BoM, 2014). The Pilbara region represents a transitional zone between semi-arid and tropical climates, and receives a majority of its rainfall during the summer months (Kendrick, 2001; CALM, 2002). During these periods of intense rainfall, localised flooding is not unusual (DoW, 2010). The application area consists mostly of stony soils and hard clays (Van Vreeswyk et al., 2004), which are less permeable to water and therefore there is the potential of some localised flooding within cleared areas.

A majority of the application area is located within the Ashburton River catchment area, and a small portion lies within the Fortescue River catchment area (GIS Database). Given the size of the area to be cleared (48.3 hectares) compared with the size of the catchment areas (Ashburton - 7,877,743 hectares; Fortescue - 1,860,784 hectares), and that the permit area is subject to seasonal flood events, it is unlikely that the clearing will exacerbate the incidence or intensity of flooding within the local area.

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

Methodology

BoM (2014)

CALM (2002)
DoW (2010)
Kendrick (2001)
Van Vreeswyk et al. (2004)
GIS Database:
- Hydrographic Catchments – Catchments

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

Comments

There are no native title claims over the area under application (GIS Database). The mining tenure 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.*

According to available databases, there are 16 registered Aboriginal Sites 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 Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation (formerly 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.

The clearing permit application was advertised on 9 December 2013 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions received.

Methodology

GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims – Determined by the Federal Court
- Native Title Claims – Registered with the NNTT

4. References

AES (2013) Karijini transmission corridor Level 1 vegetation, flora and fauna survey. Unpublished report prepared by Astron Environmental Services for Rio Tinto Iron Ore.

Biota (2008a) A vegetation and flora survey of the Rio Tinto rail duplication – bellbird siding to Juna Downs. Unpublished report prepared for Rio Tinto Iron Ore.

Biota (2008b) Rio Tinto rail duplication fauna assessment: bellbird siding to Juna Downs. Unpublished report prepared for Rio Tinto Iron Ore.

BoM (2014) Climate Statistics for Australian Locations. Climate Statistics for Australian Locations. A Search for Climate Statistics for Tom Price, Australian Government Bureau of Meteorology, http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=005005, viewed January 2014.

CALM (2002) Bioregional Summary of the 2002 Biodiversity Audit for Western Australia. Department of Conservation and Land Management, Western Australia.

DEC (2001) Environmental weed strategy for Western Australia. Department of Environment and Conservation, Perth.

DEC (2011) Invasive Plant Prioritisation, Department of Environment and Conversation, Perth.

DEC (2013) Priority Ecological Communities for Western Australia. Species and Communities Branch, Department of Environment and Conservation, Perth.

DEC (2014) NatureMap: Mapping Western Australia's Biodiversity, Department of Environment and Conservation, http://naturemap.dec.wa.gov.au/default.aspx, viewed January 2014.

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

DoW (2010) Pilbara: Regional water plan 2010 – 2030. Department of Water, Perth.

Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, Perth.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Kendrick, P. (2001) Pilbara 3 (PIL3 – Hamersley Subregion). In A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002 (eds J. E. May & N. L. McKenzie). Department of Conservation and Land Management, WA.

RTIO (2001) Rare flora survey of the Tom Price to Yandi powerline. Unpublished internal report, Rio Tinto Iron Ore Pty Ltd.

RTIO (2013a) Statement Addressing the 10 Clearing Principles: Transmission line access track repairs and maintenance of pads – Tom Price to Juna Downs. Unpublished internal document, Rio Tinto Iron Ore Pty Ltd.

RTIO (2013b) Additional information provided to the assessing officer by Rio Tinto Iron Ore Pty Ltd on 15 January 2014.

Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A., Hennig, P. (2004) An inventory and condition survey of the Pilbara Region, Western Australia, Technical Bulletin No. 92. Department of Agriculture Western Australia, South Perth.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), 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 (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
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 Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

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.