



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5996/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Limited

1.3. Property details

Property: Iron Ore (Robe River) Agreement Act 1964, Mineral Lease 248SA (AML 70/248)
Local Government Area: Shire of East Pilbara
Colloquial name: West Angelas Deposit C Drill Program

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 5 June 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*); and
- 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*.

Several flora and vegetation surveys have covered or intersected the application area. The most recent survey was conducted by Biota Environmental Sciences (Biota) between 7 and 8 September 2013 with the survey area covering 140 proposed drill holes and associated tracks for the West Angelas Deposit C Exploration Program (survey area of 131.9 hectares) (Biota, 2013). This survey area occurs within the larger application area (approximately 855 hectares) and included a description of vegetation types in the survey area, although a vegetation map was not included. Biota (2013) also reviewed previous surveys conducted over the area. Rio Tinto (2013) has sourced vegetation mapping for the application area from two previous flora and vegetation surveys that were conducted by Biota in August 2010 and Ecologia in July and August 2012 (Biota, 2010; Ecologia, 2013). According to Rio Tinto (2013), the following 12 vegetation associations occur within the application area:

Hilltops and Slopes

1. AiSggTw - *Acacia inaequilatera* isolated trees over *Senna glutinosa* subsp. *glutinosa* open shrubland over *Triodia wiseana* or *Triodia pungens* open hummock grassland.
2. AbPr1a - *Acacia bivenosa* isolated trees over *Ptilotus rotundifolius* isolated shrubs over *Ischaemum albobillosum* isolated tussock grasses.
3. AaSggEp - *Acacia aptaneura* open woodland over *Senna glutinosa* subsp. *glutinosa* isolated shrubs over *Enneapogon polyphyllus* isolated tussock grasses.

Plains

4. ApTb - *Acacia pruinocarpa* sparse woodland over *Triodia basedowii* and/or *T. pungens* open hummock grassland.
5. ApEcTp - *Acacia pruinocarpa* sparse woodland over *Eremophila caespitosa* sparse shrubland over *Triodia pungens* open hummock grassland.
6. AaEffTp - *Acacia aptaneura* open woodland over *Eremophila fraseri* subsp. *fraseri* sparse shrubland over *Triodia pungens* sparse hummock grassland.
7. PnnAp - *Ptilotus nobilis* subsp. *nobilis* isolated shrubs over *Astrebla pectinata* open tussock grassland.
8. SggGrTp - *Senna glutinosa* subsp. *glutinosa* sparse woodland over *Gossypium robinsonii* sparse shrubland over *Triodia pungens* hummock grassland.

Floodplains and Drainages

9. ExPnnTt - *Eucalyptus xerothermica* sparse woodland over *Ptilotus nobilis* subsp. *nobilis* sparse shrubland over *Themeda triandra* open tussock grassland.

10. AaPoEp - *Acacia aptaneura* open woodland over *Ptilotus obovatus* sparse shrubland over *Enneapogon polyphyllus* isolated tussock grasses.

11. AaAoAc - *Acacia aptaneura* sparse woodland over *Abutilon otocarpum* isolated shrubs over *Aristida contorta* sparse tussock grassland.

12. AaSaoTp - *Acacia aptaneura* open woodland over *Senna artemisioides* subsp. *oligophylla* sparse shrubland over *Triodia pungens* open hummock grassland.

The following four broad vegetation types were described by Biota (2013) within the application area:

Vegetation of Plains

1. P1: AanTp/G - *Acacia aneura* low open woodland over *Triodia pungens* very open hummock grassland over mixed open tussock grassland.

2. P2: G - Mixed open tussock grassland.

Vegetation of Hills and Slopes

3. H1: ElAprAbTpTps - *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia pruinocarpa* scattered tall shrubs over *Acacia bivenosa* scattered shrubs over *Triodia pungens*, *T. sp.* Shovelanna Hill (S. van Leeuwen 3835).

Vegetation of Drainage Lines

4. D1: EvAci/G - *Eucalyptus victrix*, *Acacia citrinoviridis* low open woodland over mixed open tussock grassland.

Clearing Description

West Angelas Deposit C Drill Program.

Robe River Limited proposes to clear up to 25 hectares of native vegetation within a total boundary of approximately 855 hectares, for the purpose of an exploration drilling program. The project is located approximately 95 kilometres east of Paraburdoo, in the Shire of East Pilbara.

Vegetation Condition

Pristine: No obvious signs of disturbance (Keighery, 1994);

To

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

Comment

The proposed exploration drilling program has been planned to evaluate the ore body and consists of 150 proposed drill holes, 40 kilometres of access tracks and associated activities (Rio Tinto, 2013).

The condition of each vegetation unit was determined using a scale based on Trudgen (1988). These condition ratings have been converted to the Keighery (1994) scale.

According to Biota (2013), disturbance was limited to low cattle activity and some track clearing.

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 consists of 12 vegetation associations occurring across three major landforms including hilltops and slopes; plains; and floodplains and drainages (Rio Tinto, 2013). These landforms are consistent with those identified by Biota (2013) (plains; hills and slopes; and drainage lines). Hilltops and slopes are distributed across most of the southern portion of the application area and cover approximately 325 hectares or 38% of the application area (Rio Tinto, 2013). Plains are the dominant landform which covers approximately 422 hectares or 50% of the application area. The floodplains and drainages occupy 105 hectares or 12.4% of the application area.

No Threatened Ecological Communities have been recorded within the application area (GIS Database; Biota, 2013; Rio Tinto, 2013). The application area is within the Priority 1 Priority Ecological Community (PEC) 'West Angelas cracking clay' (Biota, 2013; GIS Database). This PEC is described as 'Open tussock grasslands of *Astrebla pectinata*, *A. elymoides*, *Aristida latifolia*, in combination with *Astrebla squarrosa* and low scattered shrubs of *Sida fibulifera*, on basalt derived cracking-clay loam depressions and flowlines' (Department of Parks and Wildlife (DPaW), 2014). The vegetation assemblage and habitat of one vegetation type (P2:G) identified by Biota (2013) was considered to be representative of and an extension to the PEC. Biota (2013) described it as a mixed open tussock grassland of *Aristida latifolia*, *Astrebla elymoides*, *Astrebla pectinata*, *Chrysopogon fallax* and *Themeda* sp. Hamersley Station. It occurred on the cracking-clay plain in the northeast of the application area and comprised 14.9 hectares (Biota, 2013). In terms of the vegetation mapping sourced from earlier surveys (Biota, 2010; Ecologia, 2013) this area corresponds to the PnnAp vegetation association (Rio Tinto, 2013). Rio Tinto (2014) states that the known extent of the boundary of the PEC (according to the DPaW dataset) encompasses an area of approximately 447.87 hectares.

Rio Tinto (2014) states that the proposed disturbance within the P2:G vegetation type is 3.3 hectares and will comprise 0.9 hectares for drill lines and 2.4 hectares for drill pads. The proposed disturbance of 3.3 hectares represents 0.7% of the total mapped PEC (447.87 hectares). Based on the low impact and temporary nature of

the proposed disturbance and the small scale of proposed disturbance, it is unlikely the proposed clearing will have a significant impact on the PEC. Potential impacts to the PEC may be minimised by the implementation of a condition that limits clearing within the PEC to 3.3 hectares. Potential impacts from weeds to the PEC may also be minimised by the implementation of a weed management condition.

Vegetation associations AaPoEp and AaSaoTp are also considered to have elevated conservation significance as they represent 'Valley Floor Mulga' communities, which are considered to be 'ecosystems at risk' (Rio Tinto, 2013). Rio Tinto (2013) notes that while representative of 'Valley Floor Mulga' communities in a broad sense, these communities are not high quality representations of this ecosystem at risk. These communities extend beyond the application area (Rio Tinto, 2013) and disturbance to these communities is not expected to significantly alter biodiversity values for the area.

Biota (2013) recorded a total of 162 native vascular flora species from 79 genera and 29 families within the survey area (131.9 hectares). Rio Tinto (2013) notes that the level of diversity for the application area is considered to be representative of the West Angelas locality. Five weed species were recorded by Biota (2013) including Bipinnate Beggartick (*Bidens bipinnata*), Buffel Grass (*Cenchrus ciliaris*), Purslane (*Portulaca oleracea*), Spiked Malvastrum (*Malvastrum americanum*) and Mimosa Bush (*Vachellia farnesiana*). Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

No Threatened Flora species have been recorded within the application area (GIS Database; Biota, 2013; Rio Tinto, 2013). Numerous Priority Flora species have been recorded during flora and vegetation surveys of the West Angelas area (Rio Tinto, 2013). One Priority 2 Flora species, *Eremophila forrestii* subsp. Pingandy, and two Priority 3 Flora species, *Rhagodia* sp. Hamersley and *Themeda* sp. Hamersley Station, have been recorded within the application area. According to Biota (2013), *Eremophila forrestii* subsp. Pingandy has previously been recorded from colluvial plains, below breakaways, and in or near drainage lines and has been recorded from numerous locations in the West Angelas locality. This species was recorded once on a stony clay plain in the northwest of the application area (Biota, 2013). Rio Tinto (2014) states it will avoid this location where possible. Given this species has only been detected once during surveys of the application area and it has been recorded from numerous locations in the area, it is unlikely the proposed clearing will have a significant impact on this species.

Rhagodia sp. Hamersley and *Themeda* sp. Hamersley Station have previously been recorded in the application area and were detected during the Biota (2013) survey. Biota (2013) recorded a single individual of *Rhagodia* sp. Hamersley from a Mulga plain adjacent to a drainage line in the eastern section of the application area. For *Themeda* sp. Hamersley Station, Biota (2013) recorded the species at 23 locations and found it was predominantly associated with the gilgai clay plains (vegetation type P2) as well as drainage areas and floodplains in the east of the application area. Both *Rhagodia* sp. Hamersley and *Themeda* sp. Hamersley Station have been detected at numerous locations outside the application area and are widespread in the Hamersley subregion (Rio Tinto, 2013; Western Australian Herbarium, 2014). Rio Tinto (2014) states these species will be avoided where possible. The proposed clearing of 25 hectares is unlikely to have a significant impact on these species.

Three of the four broad fauna habitat types identified within the application area are considered well represented in the West Angelas locality and the broader Hamersley subregion (Rio Tinto, 2013). Biota (2013) noted that the fourth habitat type, cracking-clay plain, is widespread in the Pilbara, however, the specific habitat type in the survey area is not common in the Pilbara bioregion. This habitat type corresponds to the P2:G vegetation type which is considered representative of the 'West Angelas cracking clay' PEC.

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

Methodology Biota (2013)
DPaW (2014)
Ecologia (2013)
Rio Tinto (2013)
Rio Tinto (2014)
Western Australian Herbarium (2014)
GIS Database:
- 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**

A fauna assessment was undertaken as part of the flora and vegetation survey by Biota (2013) on 7 and 8 September 2013. Botanists described the fauna habitats in the field based on the landforms, substrates and vegetation present in the survey area (131.9 hectares) (Biota, 2013). These findings were reviewed by a zoologist. Botanists also recorded opportunistic fauna sightings during foot traverses of the application area (Biota, 2013). Rio Tinto (2013) has also conducted a desktop fauna assessment.

Biota (2013) identified the following four fauna habitat types within the survey area:

- Cracking-clay plain - a plain supporting small knolls and depressions characteristic of the cracking-clay landform. When dry, the clays of this habitat are likely to give rise to large cracks, offering shelter for small vertebrate fauna species. Although cracking-clay plains are widespread in the Pilbara, the specific habitat type in the survey area is not common in the Pilbara bioregion. This habitat type corresponds with the P2:G vegetation type which is considered representative of the 'West Angelas cracking clay' PEC. Proposed clearing within this habitat will be limited to 3.3 hectares.
- Stony clay plain - clay-loam plains with a surface layer of scattered ironstone gravel. This landform is widespread and common throughout the Pilbara bioregion, and has been recorded extensively in the vicinity of the survey area.
- Stony hills and slopes - comprises the band of low rolling hills, which form the foothills of the adjacent ranges to the south. Minor flowlines and minor rocky gullies (small in scale) were also found within this habitat type. Some overhangs were located, but no caves were found. This is a very common habitat type in the Hamersley Range, and is particularly typical of the Newman land system.
- Major drainage - The major drainage fauna habitat is equivalent to vegetation type D1, comprising a low open woodland of *Eucalyptus victrix* and *Acacia citrinoviridis* over an open tussock grassland. The major drainages observed in the survey area did not contain rocky areas that could potentially contain permanent or semi-permanent areas of water. Major drainage lines are a common habitat type in the Hamersley subregion, but they have a relatively small area of representation compared to other widespread habitats. Potential impacts to major drainage habitat as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.

Fauna habitat types identified in the desktop study by Rio Tinto (2013) include rugged hills with ridges, gorges and free faces; lower slopes and pediments; and minor ephemeral creeks. These are generally consistent with the habitat types described above. Rio Tinto (2013) notes that based on aerial photography it appears that the hills are isolated in the landscape, gorges are relatively shallow and no permanent or semi-permanent water occurs within them.

The opportunistic fauna sightings by Biota (2013) recorded two mammal, 28 bird and 5 reptile species within the survey area. Fourteen active mounds of the conservation significant fauna species, Western Pebble-mound Mouse (*Pseudomys chamanii*) (Priority 4), were recorded in the application area. This species is widespread within the ranges of the central and southern Pilbara (Van Dyck and Strahan, 2008). Rio Tinto (2014) state that these will be avoided where possible. Given that similar habitat for the Western Pebble-mound Mouse is available both locally and throughout the Pilbara, the impact on this species is not likely to be significant.

Biota (2013) considered conservation significant fauna species, Rainbow Bee-eater (*Merops ornatus*) (Schedule 3, Migratory), Australian Bustard (*Ardeotis australis*) (Priority 4) and Ghost Bat (*Macroderma gigas*) (Priority 4), as likely to occur within the survey area. Several other conservation significant species may also occur in the application area (Biota, 2013; Rio Tinto, 2013). For some of these species the application area is unlikely to represent core or preferred habitat (for example, nesting or roosting sites) or the species has not been recorded during previous surveys in the locality. Other species are mobile and able to use similar habitat in the surrounding area; have a wide distribution; and/or are able to utilise a wide range of habitat types. Based on this it is unlikely the application area represents significant habitat for these species.

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

Methodology Biota (2013)
Rio Tinto (2013)
Rio Tinto (2014)
Van Dyck and Strahan (2008)

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

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

According to available databases, there are no records of Threatened Flora within the application area (GIS Database). According to Rio Tinto (2013), Threatened Flora species, *Lepidium catapycnon*, has been recorded approximately 13 kilometres north east of the application area. Rio Tinto (2013) considered one vegetation association occurring on hilltops in the application area (AiSggTw) as comprising prospective habitat for *Lepidium catapycnon* as it is similar to the vegetation type where the species was recorded 13 kilometres to the north east. This area of AiSggTw was covered by the Biota (2013) flora and vegetation survey.

No Threatened Flora species have been recorded in the application area (Rio Tinto, 2013). Biota (2013) did not record any Threatened Flora species or expect any to occur.

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

Methodology Biota (2013)
Rio Tinto (2013)
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 105 kilometres east, south east of the application area (GIS Database).

No TECs have been recorded in the application area (Rio Tinto, 2013).

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

Methodology Rio Tinto (2013)

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 is located within the Pilbara Interim Biogeographical Regionalisation for Australia (IBRA) bioregion (GIS Database). Approximately 99.58% of the pre-European vegetation remains within the Pilbara bioregion (Government of Western Australia, 2013).

The vegetation of the application area has been mapped as Beard vegetation associations 18 and 82 (GIS Database). Over 99% of these Beard vegetation associations remain at both a state and bioregional level (Government of Western Australia, 2013). Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared. A review of aerial imagery also shows that vegetation within the application area is not a remnant within the local area (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Current Extent in DPaW Managed Lands %*
IBRA Bioregion - Pilbara	17,808,657	17,733,584	~99.58	Least Concern	~8.41
Beard vegetation associations - State					
18	19,892,305	19,843,727	~99.76	Least Concern	~6.30
82	2,565,901	2,553,217	~99.51	Least Concern	~10.56
Beard vegetation associations - Bioregion					
18	676,557	672,424	~99.39	Least Concern	~17.26
82	2,563,583	2,550,899	~99.51	Least Concern	~10.57

* 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:
- Governor 50cm Orthomosaic - Landgate 2004
- IBRA WA (Regions - Sub Regions)
- 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 numerous minor, non-perennial watercourses within the application area (GIS Database). Available databases also show a minor river intersects the application area (GIS Database). Based on Biota (2013), this is a major drainage line known as the Turee Creek East Branch.

According to Rio Tinto (2013), four vegetation associations (ExPnnTt, AaPoEp, AaAoAc and AsSaoTp) grow in

association with floodplains and drainage lines. Biota (2013) also identified one vegetation type (D1:EvAci/G) growing in association with drainage lines. The former four vegetation associations occupy 105 hectares or 12.2% of the application area (Rio Tinto, 2013).

Potential impacts to the Turee Creek East Branch and the abovementioned vegetation associations may be minimised by the implementation of a watercourse management condition.

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

Methodology Biota (2013)
Rio Tinto (2013)
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

According to available databases, the application area intersects the Boolgeeda, Newman and Platform Land Systems (GIS Database).

The Boolgeeda Land System is characterised by stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). The vegetation is generally not prone to degradation and the system is not susceptible to erosion (Van Vreeswyk et al., 2004).

The Newman Land System is characterised by rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). Each of the landforms in the land system have a mantle of abundant pebbles of ironstone and other rocks, which translates to a low soil erosion risk (Van Vreeswyk et al., 2004).

The Platform Land System is characterised by dissected slopes and raised plains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). The landforms in this land system generally have surface mantles of very abundant pebbles and cobbles and the system is not susceptible to erosion (Van Vreeswyk et al., 2004).

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

Methodology Van Vreeswyk et al. (2004)
GIS Database:
- Rangeland Land System Mapping

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

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

The application area does not lie within any conservation areas or Department of Parks and Wildlife (DPAW) managed lands (GIS Database). The nearest conservation area is the Karijini National Park located approximately 3 kilometres west of the application area (GIS Database). Based on this distance and the largely uncleared landscape surrounding the application area, the proposed clearing is not likely to impact the environmental values of Karijini National Park. However, the potential spread of weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

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

Methodology 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

According to available databases, the application area is not located within a Public Drinking Water Source Area (GIS Database). There are no permanent waterbodies or watercourses within the application area, however, there is one minor river and numerous non-perennial watercourses within the application area (GIS Database). Based on Biota (2013), the minor river is the Turee Creek East Branch. Clearing in the vicinity of these watercourses is likely to result in localised erosion and sedimentation, particularly following heavy seasonal rainfall. Potential impacts to the surface water quality as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.

The climate of the area is semi-desert tropical with rain usually occurring in summer cyclonic or thunderstorm events although winter rain is not uncommon (CALM, 2002). According to available databases, the application area receives an average annual rainfall of approximately 400 millimetres with an average annual evaporation

rate of 3,400 millimetres (GIS Database). Any surface flows are therefore likely to be relatively short lived.

According to available databases, groundwater salinity within the application area is between 500 and 1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). The proposed clearing is not likely to cause salinity levels within the application area to alter.

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

Methodology Biota (2013)
CALM (2002)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)
- Rainfall – Mean Annual
- 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

The application area is located within the Ashburton River catchment area (GIS Database). Given the size of the area to be cleared (25 hectares) in relation to the size of the catchment area (7,877,743 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

According to available databases, the application area receives an average annual rainfall of approximately 400 millimetres with an average annual evaporation rate of 3,400 millimetres (GIS Database). Any surface flows are therefore likely to be relatively short lived. Whilst large rainfall events may result in flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments – Catchments
- Rainfall, Mean Annual

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

Comments

There is one native title claim over the area under application: WC2010/011 (GIS Database). This claim has been registered with the Native Title Tribunal on behalf of the claimant groups. However, 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 no 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, the Department of Parks and Wildlife 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 3 March 2014 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received objecting to the proposed clearing. The Department has liaised with the submitting party on the issues raised.

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

4. References

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- 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.
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- Rio Tinto (2013) Statement Addressing the 10 Clearing Principles West Angelas Deposit C Drill Program July 2013 RTIO-HSE-0192061. Unpublished report prepared by Rio Tinto. Dated July 2013.
- Rio Tinto (2014) Further Information provided by Rio Tinto on 8 and 30 May 2014.
- Trudgen, M.E. (1988) A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished Report Prepared for Bowman Bishaw and Associates, West Perth.
- Van Dyck, S. and Strahan, R. (2008) The Mammals of Australia, Third Edition. Reed New Holland, Sydney.
- Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) Technical Bulletin - An Inventory and Condition Survey of the Pilbara Region, Western Australia, No. 92. Department of Agriculture, Government of Western Australia, Perth, Western Australia.
- Western Australian Herbarium (2014). FloraBase - the Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/>.

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.