



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 4319/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Robe River Mining Co Pty Ltd

### 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 E

### 1.4. Application

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

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 19 May 2011

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

**Vegetation Description** Vegetation within the application areas has been mapped at a 1:250,000 scale as the following Beard vegetation associations: (Shepherd, 2009; GIS Database).

- 18: Low woodland; mulga (*Acacia aneura*); and
- 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*.

The following vegetation associations were identified across the application area (Rio Tinto, 2011; Biota Environmental Sciences Pty Ltd, 2006; Trudgen & Casson, 1998).

#### Vegetation of Stony Hills:

**H1:** *Eucalyptus leucophloia* low open woodland over *Acacia maitlandii*, *Acacia hamersleyensis* shrubland over *Triodia pungens* (*Triodia wiseana*) mid-dense hummock grassland;

**H3:** *Corymbia ferritcola*, *Eucalyptus leucophloia* low open woodland over *Triodia* sp. Mt Ella, *Triodia pungens* hummock grassland and *Eriachne mucronata* open tussock grassland;

**H5:** *Eucalyptus gamophylla* low woodland over *Triodia* aff. *basedowii* (*Triodia pungens*) mid-dense hummock grassland;

#### Vegetation of Valleys (Mulga Mosaic):

**M1:** *Acacia aneura* low open woodland over *Acacia bivenosa*, *Gossypium robinsonii*, *Sida* aff. *cardiophylla*, *Scaevola parvifolia* shrubland to low open shrubland over *Triodia pungens*, *Triodia schinzii* mid-dense hummock grassland;

**M2:** *Acacia aneura* low open woodland over *Triodia pungens*, *Triodia* aff. *basedowii* mid-dense hummock grassland;

**M3:** *Acacia aneura* woodland over *Maireana villosa*, *Ptilotus obovatus*, *Rhagodia* sp. Hamersley open to low open shrubland over *Triodia* sp. Mt Ella open hummock grassland;

**M4:** *Acacia aneura*, *Acacia pruinocarpa* low closed forest to low woodland over *Eremophila forrestii*, *Eremophila longifolia*, *Ptilotus obovatus*, *Rhagodia* sp. Hamersley low open shrubland to open shrubland over *Triodia pungens* open hummock grassland;

**Vegetation of Creeklines:**

**C1:** *Eucalyptus* spp. scattered low trees over *Acacia maitlandii*, *Gossypium robinsonii*, *Petalostylis labicheoides* shrubland over *Triodia pungens* open hummock grassland and *Eriachne mucronata*, *Themeda triandra* open tussock grassland;

**C2:** *Eucalyptus xerothermica* low open woodland over *Acacia maitlandii*, *Petalostylis labicheoides*, *Rulingia luteiflora* shrubland to tall shrubland over *Triodia pungens* open hummock grassland;

**Vegetation of the Brockman Iron Formation:**

**5eda:** *Corymbia deserticola* scattered low trees over *Acacia bivenosa*, *Acacia pruinocarpa* and *Hakea chordophylla* scattered tall shrubs over *Cassia pruinosa* scattered shrubs over *Triodia* aff. *basedowii* and *Triodia pungens* open hummock grassland;

**5edac:** *Eucalyptus gamophylla* scattered low trees over *Acacia bivenosa* and *Acacia pyrifolia* scattered tall shrubs over *Triodia pungens* open hummock grassland;

**5edae:** *Scaevola acacioides* open shrubland over *Triodia pungens* open hummock grassland;

**5edb:** *Acacia ayersiana*, *Acacia* aff. *aneura*, *Acacia* aff. *catenulata* high open shrubland over *Maireana* spp. low scattered shrubs over *Triodia pungens* very open hummock grassland;

**Vegetation of the Marra Mamba Iron Formation:**

**5kdm1:** *Eucalyptus leucophloia* scattered low trees over *Triodia* aff. *basedowii* and *Triodia pungens* open hummock grassland;

**5kdm2:** *Eucalyptus leucophloia* and *Corymbia hamersleyana* low open woodland over *Acacia maitlandii* scattered shrubs over *Triodia wiseana* open hummock grassland;

**Vegetation of Valleys, Plains and Low Hills:**

**6adb213:** *Acacia* aff. *aneura*, *Acacia pruinocarpa* and *Acacia* aff. *aneura* high shrubland over *Eremophila forrestii* ssp. *forrestii* scattered shrubs over *Triodia pungens* very open hummock grassland;

**6adb215:** *Aristida contorta* open annual tussock grassland;

**6adb232:** *Acacia aneura* var. *longicarpa* high shrubland over *Rhagodia* sp. Hamersley and *Ptilotus obovatus* open shrubland over *Digitaria brownii* scattered tussock grassland; and

**6adb26:** *Acacia* aff. *aneura* and *Acacia pruinocarpa* scattered tall shrubs over *Maireana* spp. scattered low shrubs over *Triodia pungens* open hummock grassland with *Themeda triandra* scattered tussock grass.

**Clearing Description**

Robe River Mining Co Pty Ltd has applied to clear up to 600 hectares of native vegetation within an application area totalling approximately 900 hectares for the purpose of mineral production. The proposed clearing will ensure a continued supply of dry ore to the existing mine operations. Vegetation will be cleared for open pits, waste dumps, stockpiles, haul roads and other mine support infrastructure, as well as associated activities such as maintenance (Rio Tinto, 2011).

Topsoil and vegetation from cleared areas will be stockpiled for use in later rehabilitation (Rio Tinto, 2011).

**Vegetation Condition**

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

To

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

**Comment**

The application area is located in the Pilbara region of Western Australia and is situated approximately 93.5 kilometres north west of Newman (GIS Database).

**3. Assessment of application against clearing principles**

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

**Comments**

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

The application area occurs within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic

Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by sedimentary ranges and plateaux, dissected by gorges (CALM, 2002). At a broad scale, vegetation can be described as Mulga low woodlands over bunch grasses on fine textured soils in valley floors and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils of the ranges (CALM, 2002).

The vegetation within the application areas consists of Beard vegetation associations 18 and 82 which are common and widespread throughout the Pilbara region, with approximately 100% of the pre-European vegetation extent remaining (Shepherd, 2009; GIS Database).

Hamersley Iron Pty Ltd conducted a review of previous vegetation surveys conducted within and in close proximity to the application area, as well as a desktop survey of the application area (Rio Tinto, 2011). The review and desktop survey identified five Priority flora species as being previously recorded within the application area (Rio Tinto, 2011; Biota Environmental Sciences Pty Ltd, 2006). These included:

- *Josephinia* sp. Marandoo (Priority 1)
- *Indigofera gilesii* subsp. *gilesii* (Priority 3)
- *Themeda* sp. Hamersley Station (Priority 3)
- *Triodia* sp. Mt Ella (Priority 3)
- *Acacia effusa* (Priority 3)

The proposed clearing is unlikely to impact on the conservation status of the above Priority Flora; however, a large number of individuals may be directly impacted by the proposed clearing activities.

The broad fauna assemblages of the application area are very much intact and representative of a natural ecosystem. The fauna habitats that occur within the proposed impact footprint clearly also occur beyond the impact footprint (Rio Tinto, 2011; Biota Environmental Sciences Pty Ltd, 2005).

The application area has suffered previous disturbance from mineral exploration activities, while the area surrounding the application area has been previously cleared for mineral production and is currently being mined as part of Robe River Mining Co's West Angelas Project.

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

**Methodology** Biota Environmental Sciences Pty Ltd (2005)  
Biota Environmental Sciences Pty Ltd (2006)  
CALM (2002)  
Rio Tinto (2011)  
Shepherd (2009)  
GIS Database:  
- IBRA WA (Regions - subregions)  
- 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 may be at variance to this Principle**

According to Shepherd (2009) approximately 100% of the pre-European vegetation remains within the Hamersley bioregion. Given the extent of native vegetation remaining in the local area and bioregion, the vegetation to be cleared does not represent a significant ecological linkage.

In 2005, a fauna survey was undertaken by Biota Environmental Sciences over the West Angelas Deposits E and F (Biota Environmental Sciences Pty Ltd, 2005).

During the survey several forms of potential Short Range Endemic (SRE) fauna, namely the Mygalomorph (Trapdoor) spiders were recorded (Rio Tinto, 2010). The specimens collected belonged to five different genera from four families, with all specimens being females. However, none of the Mygalomorph spiders found during the survey were located in the vicinity of the West Angelas Deposit E area. The nearest record was a single *Heteropoda*, recorded from the H3 vegetation type more than 4.5 kilometres north of the application area (Rio Tinto, 2010).

Biota Environmental Sciences Pty Ltd (2005) recorded 4 broad habitat types as occurring within the application area:

- Broad colluvial valleys dominated by *Acacia aneura*;
- Lower stony foot slopes at the interface between *Acacia* dominated and Eucalypt dominated communities;
- Stony hilltops and upper slopes dominated by Eucalypts over *Triodia*; and
- Incised gullies and creeks.

The incised gullies and creeks habitat may be recognised as primary habitat for numerous fauna species. The gorges and their associated breakaways provide both foraging habitat, and more importantly, significant shelter in terms of caves, crevices and boulder piles. The gorges, gullies and creeks may be considered as important

refugia in a local context.

One fauna habitat is considered to have moderate conservation significance within the application area, based on the vegetation types to which it relates. This is the "broad colluvial valleys dominated by *Acacia aneura*" fauna habitat which relates to the Mulga vegetation types M1-M5. These vegetation types are considered to comprise ecosystems at risk in the form of grove/intergrove and valley floor mulga (Biota Environmental Sciences Pty Ltd, 2005; Biota Environmental Sciences Pty Ltd, 2006).

According to Biota Environmental Sciences Pty Ltd (2005), the fauna habitats available within the West Angelas Deposit E are not restricted in the local area, at a subregional scale or a bioregional scale. Therefore it is considered unlikely that the proposed clearing activities to develop the West Angelas Deposit E would have a significant detrimental effect on the habitat values of the area.

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

**Methodology** Biota Environmental Sciences Pty Ltd (2005)  
Biota Environmental Sciences Pty Ltd (2006)  
Rio Tinto (2010)  
Shepherd (2009)

**(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 known records of Declared Rare Flora (DRF) species within the application area (GIS Database).

Rio Tinto (2011) conducted a review of the previous flora and vegetation surveys which had been conducted within the West Angelas Deposit E application area and nearby surrounding areas between 1998 and 2006 (Biota Environmental Sciences Pty Ltd, 2006; Pilbara Iron, 2005; Trudgen & Casson, 1998). Rio Tinto (2011) also conducted a search of the Department of Environment and Conservation (DEC) and Western Australian Museum's NatureMap database to identify DRF and Priority Flora species which have the potential to occur with application area. The database searches were undertaken within a radius of approximately 20 kilometres from 118°47'35"E and 23°12'01"S (Rio Tinto, 2011).

Based on the results of the database search, the DRF species, *Lepidium catapycnon*, as listed by DEC, has previously been recorded within or in close proximity to the application area (Rio Tinto, 2011). No species of DRF were recorded within the application area during the previous surveys (Biota Environmental Sciences Pty Ltd, 2006; Pilbara Iron, 2005; Trudgen & Casson, 1998).

Rio Tinto (2011) indicate that there may be suitable habitat for *L. catapycnon* within the application area, as this species is typically found on skeletal soils on hillsides of the Hamersley Ranges. However, the closest known records of *L. catapycnon* lie approximately 14 kilometres north of the application area (GIS Database). Given the absence of records of *L. catapycnon* in the greater West Angelas area and the failure to record the species during extensive searches of the West Angelas Deposit E it is unlikely that *L. catapycnon* inhabits the application area.

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

**Methodology** Biota Environmental Sciences Pty Ltd (2006)  
Pilbara Iron (2005)  
Rio Tinto (2011)  
Trudgen & Casson (1998)  
GIS Database:  
- Declare Rare and Priority Flora List

**(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.**

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

A search of available databases reveals that there are no Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest TEC (Ethel Gorge) is located approximately 94 kilometres east south east of the application area (GIS Database). At this distance there is little likelihood of any impact to the TEC from the proposed clearing.

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

**Methodology** 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 clearing application area falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion in which approximately 99.95% of the pre-European vegetation remains (GIS database; Shepherd, 2009).

The vegetation of the clearing application area has been mapped as Beard vegetation associations **18**: Low woodland; mulga (*Acacia aneura*) and **82**: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (GIS Database, Shepherd, 2009). According to Shepherd (2009) approximately 100% of Beard vegetation associations 18 and 82 remain at both the state and regional level (see table).

According to the Bioregional Conservation Status of Ecological Vegetation Classes, the conservation status for the Pilbara Bioregion and Beard vegetation associations 18 and 82 is of "Least Concern" (see table) (Department of Natural Resources and Environment, 2002).

Only a small percentage of Beard vegetation associations 18 and 82 are protected within conservation reserves, however, the bioregion remains largely uncleared. As a result, the conservation of the vegetation associations within the bioregion is not likely to be impacted on by this proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,193	17,785,001	~99.89%	Least Concern	~6.32%
Beard vegetation associations - State					
18	19,892,305	19,890,275	~99.99%	Least Concern	~2.13%
82	2,565,901	2,565,901	~100%	Least Concern	~10.24%
Beard vegetation associations - Bioregion					
18	676,557	676,557	~100%	Least Concern	~16.8%
82	2,563,583	2,563,583	~100%	Least Concern	~10.25%

\* Shepherd (2009)

\*\* Department of Natural Resources and Environment (2002)

The vegetation under application is not a remnant of vegetation in an area that has been extensively cleared.

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

**Methodology** Department of Natural Resources and Environment (2002)  
Shepherd (2009)  
GIS Database:  
- IBRA WA (Regions - subregions)  
- 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**

According to available GIS Databases, there are no permanent wetlands or watercourses within the application area, however there are numerous minor ephemeral watercourses within the application area (GIS Database).

Based on vegetation mapping conducted by Biota Environmental Sciences Pty Ltd (2006) and Trudgen & Casson (1998) two of the vegetation associations found within the application area are associated with drainage areas.

**C1:** *Eucalyptus* spp. scattered low trees over *Acacia maitlandii*, *Gossypium robinsonii*, *Petalostylis labicheoides* shrubland over *Triodia pungens* open hummock grassland and *Eriachne mucronata*, *Themeda triandra* open tussock grassland; and

**C2:** *Eucalyptus xerothematica* low open woodland over *Acacia maitlandii*, *Petalostylis labicheoides*, *Rulingia luteiflora* shrubland to tall shrubland over *Triodia pungens* open hummock grassland (Biota Environmental

Sciences Pty Ltd, 2006).

The riparian vegetation of the application area may be disturbed due to the construction of mining infrastructure which may alter the watercourses natural regime. However, the drainage lines within the application area are likely to have suffered previous disturbance from the mineral exploration activities which have been undertaken over the area (GIS Database). To minimise the impact and ensure the natural water flow is maintained it is recommended that culverts and floodways be installed where access tracks intersect the drainage line.

Based on the above, the proposed clearing is at variance to this Principle. However, the proposed clearing is not likely to significantly impact on the conservation of vegetation growing in association with permanent watercourses or wetlands due to the absence of these within the application area. Should any watercourses be disturbed the proponent should liaise with the Department of Water to determine whether a Bed and Banks permit is necessary for the proposed works.

**Methodology** Biota Environmental Sciences Pty Ltd (2006)  
Trudgen & Casson (1998)  
GIS Database:  
- Hydrography, Linear  
- Geodata, Lakes  
- Govenor 50cm Orthomosaic - Landgate 2004

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

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

The application area has been surveyed by the Department of Agriculture and Food (Van Vreeswyk et al., 2004). According to available datasets the application area intersects the Boolgeeda and Newman land systems (GIS Database).

The Newman land system consists of rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). The Boolgeeda land system is comprised of stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). The Boolgeeda land system covers approximately 794 hectares of the application area (88.2%) and is not susceptible to erosion (Van Vreeswyk et al., 2004), whilst the Newman land system covers approximately 106 hectares of the application area (11.8%). Some parts of the Newman land system may be slightly susceptible to erosion if vegetative cover is lost (Van Vreeswyk et al., 2004).

The proposed clearing of up to 600 hectares of native vegetation within the application area for the purpose of developing the West Angelas Deposit E will include the construction of pits, waste dumps, stockpiles, haul roads and other supporting infrastructure and is likely to permanently impact on large areas across the application area. It appears likely that the clearing of native vegetation may increase the risk of soil erosion occurring. However, the majority of the clearing is for the purpose of establishing mine site infrastructure that is likely to become permanent or long-term features within the application area. As the cleared area will be utilised by various pieces of large-scale mine infrastructure, the risk of erosion occurring on these particular land units will be minimised. It is most likely that the cleared area will be particularly susceptible to erosion immediately after the native vegetation has been cleared, and during the period that the cleared areas are left exposed. Potential erosion impacts as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition to ensure large areas are not void of vegetative cover for extended periods.

According to GIS Databases there are no permanent wetlands or watercourses within the application area; however, numerous ephemeral drainage lines pass through the application area (GIS Database). There is the potential for unnatural sedimentation and catchment reduction within these drainage lines as a result of the proposed clearing.

The proposed clearing activities will involve significant disturbance to a large area of native vegetation, and in addition the proposed clearing is likely to disturb the structure of surface soils and the underlying mantles. The use of heavy machinery, and also light vehicles, during clearing activities is likely to cause some degree of soil compaction, which may adversely impact soil structure.

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

**Methodology** Van Vreeswyk et al. (2004)  
GIS Database:  
- Hydrography, Linear  
- 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 proposed clearing is not located within a conservation reserve (GIS Database). The nearest known conservation reserve is Karijini National Park, located approximately 15 kilometres west north west of the application area (GIS Database). At this distance there is little likelihood of any impact to Karijini National Park from the proposed clearing.

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**

There are no permanent wetlands or watercourses within the application area (GIS Database).

The nearest major drainage system is Turee Creek, located approximately 24 kilometres west of the application area. Additional creeks ephemerally flow around and throughout the application area. Numerous minor flowlines drain water from the hills and ridges of the application area towards Turee Creek or east towards Kalgan Creek (GIS Database).

Given that the application area receives approximately 500 millimetres of rainfall per year and experiences a mean annual evaporation of approximately 3,600 millimetres (GIS Database), surface water flows within the application area generally only occur during intense cyclonic events, and in response to surface runoff from exposed rock surfaces.

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the Newman Water Reserve which is located approximately 66 kilometres east south east of the application area. Given the distance separating the application area and the Newman Water Reserve, the proposed clearing is unlikely to impact on the water quality of the Newman Water Reserve.

The application area is characterised by the Ashburton River hydrographic catchment area (GIS Database). The application area, which includes the proposed pits, waste dumps, stockpiles, haul roads and other associated infrastructure, is situated within the Ashburton River catchment which covers a total area of approximately 7,877,743 hectares (GIS Database).

The groundwater salinity within the application area is approximately 500-1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. Given the low rainfall to high evaporation rate, the proposed clearing of 600 hectares of native vegetation is not likely to significantly increase groundwater recharge which could otherwise lead to significant rises in ground water levels. The proposed clearing is not likely to cause deterioration in the quality of groundwater in the local area.

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

**Methodology** GIS Database:  
- Evaporation Isopleths  
- Geodata, Lakes  
- Govenor 50cm Orthomosaic - Landgate 2004  
- Groundwater Salinity, Statewide  
- Hydrographic Catchments - Catchments  
- Rainfall, mean annual  
- Public Drinking Water Source Areas

**(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 may be at variance to this Principle**

The application area experiences a tropical semi-desert climate (CALM, 2002). The average annual rainfall of the application area is 500 millimetres and the area experiences a mean annual evaporation of approximately 3,600 millimetres (GIS Database). Climate statistics indicate that rainfall in the region is mainly during summer and is typically experienced as cyclonic events (CALM, 2002).

Given the low rainfall to high evaporation ratio of the application areas and considering the infrequency of significant rainfall events in the region (GIS Database), it would be expected that any normal rainfall would quickly evaporate or infiltrate the soil. The proposed clearing of 600 hectares within the application area is

unlikely to cause or exacerbate flooding during normal rainfall events. It is considered that any localised flooding is only likely to occur as a result of any infrequent significant rainfall events.

Shepherd (2009) vegetation statistics indicate that approximately 100% of the pre-European vegetation extent remains within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region. The proposed clearing of up to 600 hectares of native vegetation constitutes only a very small proportion of the size of the Ashburton River catchment (less than approximately 0.008% of the total catchment area) which remains largely uncleared (GIS Database; Shepherd, 2009). Vegetation is considered an important ground cover as it slows surface water flows, and enables rainwater to infiltrate the soil to depths where it can be utilised by vegetation. Given that the Pilbara bioregion, as well as the surrounding regions, remain largely uncleared (Shepherd, 2009), the proposed clearing is not likely to impact significantly on the drainage characteristics of the Ashburton River catchment area.

Robe River Mining Co Pty Ltd has applied to clear up to 600 hectares within a broader area of approximately 900 hectares. Therefore there is potential for the broad distribution and clearing of disjunct areas rather than clearing concentrated within a single large clearing area. The clearing of up to 600 hectares within the application area has the potential to create a localised catchment area that may cause or exacerbate local flooding within or adjacent to the cleared area, mainly following significant rainfall events.

According to aerial imagery the application area is characterised by ridges, crests, steep scree slopes, gullies, gorges, gently inclined lower slopes and narrow drainage floors. The proposed clearing has the potential to cause increased runoff which may increase the risk of local flooding in lower lying, downstream or adjacent areas.

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

**Methodology** CALM (2002)  
Shepherd (2009)  
GIS Database:  
- Evaporation Isopleths  
- Govenor 50cm Orthomosaic - Landgate 2004  
- Hydrographic Catchments - Catchments  
- Rainfall, Mean Annual

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

##### **Comments**

There is one Native Title Claim (WC10/11) over the area under application (GIS Database). This claim has been registered with the National 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*.

There are numerous 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 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 application was referred to the Environmental Protection Authority (EPA) by Robe River Mining Co Pty Ltd on the 1 April 2010. The EPA set the level of assessment as 'Not Assessed - Public Advice Given and Managed under Part V of the EP Act (Clearing)' on 21 June 2010. No appeals were received in relation to the EPA's decision.

The clearing permit application was advertised on 25 April 2011 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to the proposed clearing.

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



## 4. References

- Biota Environmental Sciences Pty Ltd (2005) Fauna Habitat and Fauna Assemblage of Deposits E and F at West Angelas. Unpublished report prepared for Robe River & Associates, Western Australia - June 2005.
- Biota Environmental Sciences Pty Ltd (2006) Flora and Vegetation Survey of West Angelas Deposit E & F. Unpublished report prepared for Robe River & Associates, Western Australia - March 2006.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3-Hamersley subregion) Department of Conservation and Land Management, Western Australia.
- 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.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Pilbara Iron (2005) Pilbara Iron: West Angelas Mining, Dumping, Stockpiling, Haul Roads, etc Rare Flora Survey. Unpublished internal report.
- Rio Tinto (2010) Short Range Endemic Fauna Review: West Angelas Deposit E Project. Unpublished internal report.
- Rio Tinto (2011) Application for a Clearing Permit (Purpose Permit) Deposit E (West Angelas) - ML248SA.
- Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- Trudgen M.E & Casson N. (1998) Flora and vegetation surveys of orebody A and orebody B in the West Angela Hill area, an area surrounding them, and of rail route options considered to link them to existing Robe River Iron Associated rail line. Unpublished report prepared for Robe River Iron Associates, Western Australia - March 1998.
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P., and Leighton, K.A. (2004) An Inventory and Condition Survey of the Pilbara Region, Western Australia, Department of Agriculture, Western Australia.

## 5. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>CALM</b>	Department of Conservation and Land Management (now DEC), Western Australia
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia
<b>DEC</b>	Department of Environment and Conservation, Western Australia
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DEC), Western Australia
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia
<b>DMP</b>	Department of Mines and Petroleum, Western Australia
<b>DoE</b>	Department of Environment (now DEC), Western Australia
<b>DoIR</b>	Department of Industry and Resources (now DMP), Western Australia
<b>DOLA</b>	Department of Land Administration, Western Australia
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environmental Protection Act 1986, Western Australia
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
<b>GIS</b>	Geographical Information System
<b>ha</b>	Hectare (10,000 square metres)
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>RIWI Act</b>	Rights in Water and Irrigation Act 1914, Western Australia
<b>s.17</b>	Section 17 of the Environment Protection Act 1986, Western Australia
<b>TEC</b>	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.

