



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 5795/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

### 1.3. Property details

Property: Iron Ore (Hamersley Range) Agreement Act 1963, Mineral Lease 4SA (AML 70/4)  
Iron Ore (Hamersley Range) Agreement Act 1963, General Purpose Lease 3SA (AG 70/3)  
Miscellaneous Licence 47/209  
Miscellaneous Licence 47/136  
Exploration Licence 47/1789  
Local Government Authority: Shire of Ashburton  
Colloquial name: Tom Price Mine

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
824		Mechanical Removal	Mineral Production, Mineral Exploration and Associated Activities

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 12 December 2013

## 2. Background

### 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. Three Beard vegetation associations have been mapped within the application area:

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;  
162: Shrublands; snakewood scrub; and  
567: Hummock grasslands, shrub steppe; mulga and kanji over soft spinifex and *Triodia basedowii* (GIS Database).

Botanists from ENV Australia Pty Ltd (ENV) conducted a flora, vegetation and fauna assessment survey over the application area in August 2011. A separate Priority Flora survey was undertaken in October 2011. A level 2 targeted fauna survey was undertaken in late November/ early December 2011. The flora, vegetation and fauna assessment included a review and summary of numerous previous flora and vegetation surveys. Forty vegetation associations were identified across six major landforms over the survey area (ENV, 2013):

##### Hill Tops

**H1 - EgEkAhPITwERm:** *Eucalyptus gamophylla*, *E. kingsmillii* subsp. *kingsmillii* and *E. repullulans* open tree mallee over *Acacia hamersleyensis* and *Petalostylis labicheoides* high open shrubland over *Triodia wiseana* open hummock grassland over *Eriachne mucronata* very open tussock grassland on skeletal red-brown silty clay loam on high rocky hill tops.

**H2 - EIAp(s)Tw:** *Eucalyptus leucophloia* subsp. *Leucophloia* and *Acacia pruinocarpa* low woodland over mixed *Acacia* spp. open scrub over *Triodia wiseana* closed hummock grassland on hill tops.

**H3 - EIAbAmTw:** *Eucalyptus leucophloia* subsp. *Leucophloia* low open woodland over *Acacia bivenosa* and *A. maitlandii* high shrubland over *Triodia wiseana* very open hummock grassland on red-brown sandy loam on hill tops and upper slopes.

**H4 - ChEkEgAhTb:** *Corymbia hamersleyana*, *Eucalyptus kingsmillii* subsp. *kingsmillii* and *E. gamophylla* very open mallee over *Acacia hamersleyensis* high shrubland over *Triodia brizoides* open hummock grassland on skeletal red-brown silty clay on upper slopes of high rocky hills.

**H5 - ChEIhAmTb:** *Corymbia hamersleyana* and *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia hamersleyensis* and *A. maitlandii* open shrubland over *Triodia brizoides* hummock

grassland on skeletal red-brown sandy loam on high rocky hill slopes.

**H6 - HcAarTb:** *Hakea chordophylla* scattered tall shrubs over *Acacia arida* open shrubland over *Triodia brizoides* hummock grassland on red-brown silty clay on upper slopes of high rocky hills.

**H7 - ChEIAbTWtHt:** *Corymbia hamersleyana* and/or *Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia bivenosa* *A. inaequilatera* and *Petalostylis labicheoides* scattered tall shrubs to open scrub over *Triodia wiseana* open hummock grassland over *Themeda triandra* scattered tussock grasses on red-brown sandy clay on hill tops and slopes.

**H8 - EIEgAhAbTw:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees over *E. gamophylla* scattered mallees over *Acacia hamersleyensis* and *A. bivenosa* shrubland over *Triodia wiseana* hummock grassland on hill tops.

**H9 - EITw:** *Eucalyptus leucophloia* subsp. *Leucophloia* low open woodland over *Triodia wiseana* hummock grassland on skeletal red-brown silty clay on high ridges and hill tops.

#### Hill Slopes

**S1 - EIErAbTwERIm:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees over *E. repullulans* open mallee over *Acacia bivenosa* scattered tall shrubs over *Triodia wiseana* scattered hummock grassland over *Eriachne mucronata* scattered tussock grasses on skeletal brown-orange silty clay on shale slopes.

**S2 - AaAxTbTp:** *Acacia xiphophylla* and *A. aneura* high shrubland over *Triodia brizoides* and *T. pungens* open to very open hummock grassland on skeletal red-brown silty clay on hill slopes.

**S3 - AcAaAmPIAkAsp:** *Acacia citrinoviridis* and *A. aneura* var. *aneura* low open woodland over *A. maitlandii*, *Petalostylis labicheoides* and *A. kempeana* open heath over *A. spondylophylla* low shrubland over *Triodia wiseana* and *T. pungens* hummock grassland on hill slopes.

**S4 - EIAbSTsTwENspp:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees over *Acacia bivenosa* and *Stylobasium spathulatum* open shrubland over *Triodia wiseana* very open hummock grassland over *Enneapogon* spp. very open tussock grassland on red-brown clayey sand on hill slopes.

**S5 - EIApAmaTp:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees over *Acacia pruinocarpa* and *A. marramamba* open shrubland over *Triodia epactia* open hummock grassland on red-brown silty clay on hill slopes.

#### Gorges, Gullies and Steep Slopes

**G1 - DpeDpTHtERIm:** *Dodonaea petiolaris* and *D. pachyneura* open scrub over *Themeda triandra* and *Eriachne mucronata* open tussock grassland over *Rhodanthe margarethae* scattered herbs on breakaways on skeletal red-brown clay loam on steep slopes and at the base of breakaways.

**G2 - AapApSAIERImARo:** *Acacia aptaneura* and *A. pruinocarpa* high open shrubland over *Santalum lanceolatum* open shrubland over *Eriachne mucronata* and *Aristida obscura* very open tussock grassland on red-brown sandy loam in the base of gorges and gullies and on very steep slopes.

**G3 - ChAhTb:** *Corymbia hamersleyana* low open woodland over *Acacia hamersleyensis* high open shrubland over *Triodia brizoides* open hummock grassland on red-brown sandy loam on the slopes of gorges and gullies and on steep slopes.

**G4 - EIEgTe:** *Eucalyptus leucophloia* subsp. *Leucophloia* low open woodland over *E. gamophylla* scattered mallees over *Triodia epactia* hummock grassland on red-brown sandy loam in on the slopes of gorges and gullies and on steep slopes of high rocky hills.

#### Low Hills

**L1 - AcEICfDvAmTe:** *Acacia citrinoviridis*, *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia ferritcola* subsp. *ferritcola* low open forest over *Dodonaea viscosa* and *A. maitlandii* shrubland over *Triodia epactia* hummock grassland on low hills.

**L2 - EITb:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees to low open woodland occasionally over *E. repullulans* scattered mallees occasionally over *Acacia bivenosa* and *Petalostylis labicheoides* high open shrubland over *Triodia brizoides* very open hummock grassland on red-brown silty clay on rocky low hills.

**L3 - AapSaaERcTwERmSPa:** *Acacia aptaneura* low open woodland over *Senna artemisioides* subsp. *x artemisioides* and *Eremophila cuneifolia* scattered low shrubs over *Triodia wiseana* very open hummock grassland over *Eriachne mucronata* and *Sporobolus australasicus* very open tussock grassland on red-brown sand on low hills.

**L4 - AaaArApTbERIm:** *Acacia* aff. *aneura*, *A. rhodophloia* and *A. pruinocarpa* tall closed scrub over *Scaevola acacioides* and *Dodonaea pachyneura* scattered shrubs over *Triodia brizoides* open hummock grassland over *Eriachne mucronata* scattered tussock grasses on low hills.

**L5 - EIEgPIHcAhTw:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees over *E. gamophylla* scattered mallees over *Petalostylis labischioides*, *Hakea chordophylla* and *Acacia hamersleyensis* open shrubland to high open shrubland over *Triodia wiseana* very open hummock grassland on red-brown sandy loam on low rocky hills.

**L6 - ChEITeTw:** *Corymbia hamersleyana* and *Eucalyptus leucophloia* subsp. *leucophloia* open woodland over *Triodia epactia* and *T. wiseana* open hummock grassland on low hills.

**L7 - EgAeApAhTw:** *Eucalyptus gamophylla* scattered mallees over *Acacia exilis*, *A. pruinocarpa* and *A. hamersleyensis* high open shrubland over *Triodia wiseana* open hummock grassland on red-brown sandy clay on low rocky hills.

**L8 - EIAPeAbTw:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees over *Acacia pruinocarpa*, *A. exilis* and *A. bivenosa* low scattered shrubs over *Triodia wiseana* very open hummock grassland on red-brown sandy loam on low hills.

**L9 - EIEgErTw:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees to low open woodland over *E. gamophylla* and/or *E. repullulans* very open mallee over *Triodia wiseana* open hummock grassland on red-brown silty clay on low hills.

#### Drainage Lines

**D1 - EgAatTwTHt:** *Eucalyptus gamophylla* scattered mallees over *Acacia atkinsiana* open scrub over *Triodia wiseana* open hummock grassland over *Themeda triandra* very open tussock grassland on red-brown clayey loam in minor drainage lines.

**D2 - EIPIGrAcThtERIm:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees over *Petalostylis labicheoides*, *Gossypium robinsonii* and *Acacia citrinoviridis* open scrub over *Themeda triandra* and *Eriachne mucronata* open tussock grassland on red-brown sandy clay in minor drainage lines.

**D3 - EIAayApAcTwTe:** *Eucalyptus leucophloia* subsp. *Leucophloia* scattered low trees over *Acacia ayersiana*, *A. pruinocarpa* and *A. citrinoviridis* high open shrubland over *Triodia wiseana* and *T. epactia* open hummock grassland on red-brown sandy clay in minor drainage lines.

**D4 - EluEIEkTIARiThT:** *Eucalyptus lucasii*, *E. leucophloia* subsp. *leucophloia* and *E. kingsmillii* subsp. *kingsmillii* very open mallee over *Triodia longiceps* open hummock grassland over *Aristida inaequiglumis* and *Themeda triandra* open tussock grassland on redbrown sandy clay loam in drainage lines.

**D5 - EvExAcThtCEc:** *Eucalyptus victrix* open woodland over *E. xerothermica* scattered low trees over *Acacia citrinoviridis* high open shrubland over *Themeda triandra* and *\*Cenchrus ciliaris* tussock grassland on red-brown sandy clay in drainage lines.

**D6 - ExAtTwCEc:** *Eucalyptus xerothermica* and *E. leucophloia* subsp. *leucophloia* open woodland over *Acacia tumida* var. *pilbarensis*, *A. maitlandii* and *Stylobasium spathulatum* high open shrubland over *Triodia wiseana* and *T. angusta* scattered hummock grasses over *\*Cenchrus ciliaris* and *Themeda triandra* tussock grassland on red-brown sandy clay in minor drainage lines.

#### Plains

**P1 - EIApTw:** *Eucalyptus leucophloia* subsp. *Leucophloia* and *Acacia pruinocarpa* low woodland over *Triodia wiseana* open hummock grassland on terraced plains.

**P2 - AapApAayTw:** *Acacia aptaneura*, *A. pruinocarpa* and *A. ayersiana* high shrubland to low woodland over *Triodia wiseana* scattered hummock grasses rehabilitated community on redbrown sandy loam on rocky plains.

**P3 - ErAapAcoApTwTm:** *Eucalyptus repullulans* very open mallee over *Acacia aptaneura*, *A. colei* var. *colei* and *A. pruinocarpa* high shrubland over *Triodia wiseana* and *T. melvillei* very open hummock grassland on red-brown sandy clay on rocky plains.

**P4 - AapReCHRfCc:** *Acacia aptaneura* open scrub over *Rhagodia eremaea* low open shrubland over *Chrysopogon fallax* and *\*Cenchrus ciliaris* tussock grassland on red-brown sandy clay on alluvial plains.

**P5 - AxTI:** *Acacia xiphophylla* high shrubland over *Triodia longiceps* very open hummock grassland on red-brown clay loam on a rocky plain.

**P6 - ApAapDlaTIARin:** *A. pruinocarpa* and *A. aptaneura* open shrubland over *Dipteracanthus australasicus* subsp. *australasicus* low open shrubland over *Triodia longiceps* scattered hummock grassland over *Aristida ingrata*, *Themeda triandra* and *Sporobolus australasicus* very open tussock grassland on red-brown silty clay on alluvial plains.

#### Impacted Areas

**I1 - CD:** Completely degraded/ cleared areas including mining infrastructure and tracks.

**I2 - \*LI\*Cc:** *\*Leucaena leucocephala* low woodland over *\*Cenchrus ciliaris* tussock grassland on red-brown sandy clay on plains in previously cleared areas.

**I3 - TAa:** *\*Tamarix aphylla* high shrubland to low open forest on red-brown cracking clay of tailings dam.

**I4 - Tyd:** *Typha domingensis* sedgeland on redbrown cracking clay of tailings dam.

**I5 - D'AapAayApEITmCc:** Degraded *Acacia aptaneura*, *A. ayersiana*, *A. pruinocarpa* and *Eucalyptus leucophloia* subsp. *leucophloia* high open shrubland to low open woodland over *Triodia melvillei* open hummock grassland over *\*Cenchrus ciliaris* open tussock grassland on redbrown clay on rocky plains and low rocky hills.

\*denotes weed species

<b>Clearing Description</b>	Tom Price Mine. Hamersley Iron Pty Ltd has applied to clear up to 824 hectares within an application area of approximately 9,224 hectares for the purpose of mineral production, mineral exploration and associated activities. The application area represents the boundary of the Tom Price mine site, located approximately 1.5 kilometres south-west of Tom Price town site in the Shire of Ashburton.
<b>Vegetation Condition</b>	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994);  To:  Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).
<b>Comment</b>	The vegetation condition was assessed by botanists from Ecologia. The vegetation conditions were described using a scale based on Trudgen (1988) and have been converted to the corresponding conditions from the Keighery (1994) scale.  The proposed clearing is to enable on-going operational mining activities at the Tom Price mine site. Hamersley Iron Pty Ltd currently holds 28 clearing permits over the Tom Price mine site. These permits approve 1,426.4 hectares of clearing. Hamersley Iron Pty Ltd have identified that 597 hectares of this previously approved area has been cleared. The current clearing permit application incorporates the outstanding balance of the previously approved clearing (824 hectares) and also incorporates an increase to the approval boundary to cover the life of mine clearing requirements for the site. Hamersley Iron Pty Ltd have identified that 3,244 hectares of the application area is considered to be in 'completely degraded' condition (Keighery, 1994).  A site based clearing permit for Tom Price will simplify reporting requirements and remove minor inconsistencies in conditions between clearing permits. Hamersley Iron Pty Ltd will surrender the previously granted clearing permits located within the current application area.  Vegetation will be cleared by dozers. Topsoil and vegetative material will be stockpiled for use in rehabilitation.

### 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 is located in the Hamersley (PIL3) Interim Biogeographic Regionalisation of Australia (IBRA) subregion (GIS Database). The Hamersley subregion is generally described as Mulga low woodland 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 area is broadly mapped as Beard vegetation associations 82, 162 and 567; all of which have over 99% of their Pre-European vegetation extent remaining (Government of WA, 2013; GIS Database). A flora and vegetation survey of the application area was conducted by ENV botanists in August and September 2011. Forty vegetation communities were mapped in the application area (ENV, 2013). ENV (2013) have identified a combined total of 551 published and informal taxa from 183 genera and 60 families in the survey area. The current survey recorded 312 taxa. This is a comparable level of biodiversity to other large scale flora and vegetation surveys in the region (ENV, 2013).

The flora of the project area is generally typical of the central Pilbara (ENV, 2013). However, ENV (2013) highlight that the Pilbara is one of Australia's 15 National Biodiversity Hotspots and is a secondary centre of endemism and species richness for *Acacia*, *Triodia*, *Corymbia* and *Sida* in Western Australia (Maslin 2001, Kendrick 2001 and Maslin & van Leeuwen 2008 cited in ENV, 2013).

No Threatened Ecological Communities or Priority Ecological Communities were recorded within the application area during the ENV vegetation survey or have previously been recorded within the application area (ENV, 2013; GIS Database). However all major ephemeral watercourse vegetation types, lower slope mulga communities and hilltop flora communities are considered to be ecosystems at risk and areas of increased conservation significance due to threats from grazing and frequent fires (ENV, 2013). Gorge habitats are also identified by ENV as having elevated conservation significance as they provide refuge for humidophiles, fire intolerant species and also have potential to contain semi-permanent water (ENV, 2013).

Threatened Flora species *Lepidium catapycnon* has been recorded from a total of 112 locations within the survey area, including the results of all flora surveys reviewed by ENV (2013). During the current survey, 48 locations were recorded including 184 individuals (ENV, 2013). In addition the following Priority Flora species were recorded in the survey area (ENV, 2013):

- *Eucalyptus lucens* (P1);
- *Indigofera ixocarpa* (P2);
- *Amaranthus centralis* (P3);
- *Dampiera anonyma* (P3);
- *Geijera salicifolia* (P3);
- *Olearia mucronata* (P3);
- *Acacia bromilowiana* (P4);
- *Eremophila magnifica* subsp. *magnifica* (P4); and

- *Goodenia nuda* (P4).

ENV (2013) have recommended 13 exclusion zones in order to minimise impacts upon habitat for conservation significant flora and fauna. All exclusion zones have been adopted by Rio Tinto in their Significant Areas Management Plan (SAMP) (Rio Tinto, 2013) for the protection of habitat for Threatened Flora and conservation significant fauna. However, four exclusion zones for *Amaranthus centralis* (P3), *Dampiera anonyma* (P3) and *Eremophila magnifica subsp. magnifica* (P4) were unable to be included in the SAMP due to their proximity to active mining areas. Two Priority Flora species: *Sida sp. Barlee Range* (*S. van Leeuwen 1642*) (P3) and *Sida sp. Hamersley Range* (*K. Newbey 10692*) (P1), which have previously been recorded in the application area, were not recorded by ENV (2013). The SAMP includes significant areas of habitat for *Sida sp. Hamersley Range* (*K. Newbey 10692*) (P1) and provides protection to significant habitat for all Priority Flora species identified in the ENV (2013) survey (Rio Tinto, 2013). Given the large areas of similar habitat which remain uncleared outside of the application area the proposed clearing is unlikely to impact the conservation status of any Priority Flora species.

The SAMP covers 1192.9 hectares which is a 56% increase in area upon the exclusion areas proposed by ENV (2013) (Rio Tinto, 2013). All of the ENV (2013) proposed exclusion zones which are in proximity to Mount Nameless have been excised entirely from the application area. The Mount Nameless area is an area of high biodiversity which supports large areas of significant habitat for conservation significant species including a large population of the Threatened Flora species *L. catapycnon*. The other population of *L. catapycnon* is also captured by Rio Tinto's SAMP in a significant area located to the north of the tailings storage facility (Rio Tinto, 2013).

ENV (2013) identified 6 fauna habitats within the application area and identified four significant areas (totalling 60.3 hectares), that are considered to be of relatively high conservation value for fauna and are proposed as exclusion zones. All four of these areas are within the Gorge/ Gully habitat type and may provide significant habitat for the Northern Quoll, Pilbara Olive Python, Pilbara Leaf-nosed Bat and Ghost Bat (ENV, 2013). These exclusion zones have been adopted as significant areas in Rio Tinto's SAMP and Rio Tinto has also added a further 68 hectares for the protection of these habitat types (Rio Tinto, 2013).

Twelve introduced flora species were recorded within the application area during the survey (ENV, 2013) including one declared weed *Tamarix aphylla*. 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.

Given that the application area contains habitat for conservation significant flora and fauna species the proposed clearing may impact upon an area of high biodiversity. However, approximately 35% of the application area has already been developed for the existing Tom Price mine. The total area of clearing (824 hectares) has already been approved by 28 existing clearing permits over the site which will be surrendered. The new application area represents a significant increase to the boundary of the previously approved permits, however, a condition which limits clearing within exclusion zones identified by ENV (2013) and which have been adopted by Rio Tinto in their SAMP will minimise impacts to areas of high biodiversity.

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

<b>Methodology</b>	CALM (2002) ENV (2013) Government of WA (2013) Rio Tinto (2013) GIS Database: - IBRA WA (Regions - Sub Regions) - Pre-European Vegetation - Threatened and Priority Flora - Threatened Ecological Sites Buffered
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**(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**  
 A desktop review, habitat assessments and two field surveys (Level 1 and Level 2) were undertaken by fauna specialists from ENV (2013). The Level 2 targeted survey was undertaken to search for conservation significant fauna considered likely to occur in parts of the survey area identified by the Level 1 survey (ENV 2013).

Six broad fauna habitats were identified within the application area on the basis of vegetation and landforms:

- Gorge/ Gully;
- Drainage Line;
- Hill Crest/ Slopes;
- Low Hills;
- Stony Plain;
- Cleared/ Developed/ Rehabilitated (ENV, 2013).

10 Vertebrate species of conservation significance were either recorded or considered likely to occur within the project area (ENV, 2013):

- Northern Quoll (*Dasyurus hallucatus* - Schedule 1, Endangered)
- Pilbara Olive Python (*Liasis olivaceus barroni* - Schedule 1, Vulnerable);
- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* – Schedule 1, Vulnerable);
- Western Star Finch (*Neochmia ruficauda subclarescens* - P4);
- Western Pebble-mound Mouse (*Pseudomys chapmani* - P4);
- Ghost Bat (*Macroderma gigas* - P4);
- Australian Bustard (*Ardeotis australis* - P4);
- Bush Stone-curlew (*Burhinus grallarius* - P4);
- Rainbow Bee-eater (*Merops ornatus* - Migratory); and
- Peregrine Falcon (*Falco peregrinus* - Schedule 4).

The habitats of the survey area occur widely in the Pilbara region and are not of elevated conservation significance (ENV, 2013). The majority (93.5%) of the application area comprises either cleared/ developed areas or habitat types that are classified as providing low habitat value (ENV, 2013). However, the Gorge/Gully habitat has complex vegetation. This habitat type provides a diverse array of microhabitats that can be utilised by fauna. The outcropping of bedrock provides shelter in the form of overhangs, cracks, crevices, caves and areas for water to pool during the wet season. In addition, the vegetation provides microhabitats in the form of logs, debris and hollows (ENV, 2013). Additionally this habitat type contains deep caves that have a relatively constant temperature and humidity, providing physiologically favourable roost sites for many species of microbats including conservation significant species (ENV, 2013).

ENV (2013) have identified four significant areas (totalling 60.3 hectares), that are considered to be of relatively high conservation value for fauna and are proposed as exclusion zones. All four of these areas are within the Gorge/ Gully habitat type (ENV, 2013) and may provide significant habitat for the Northern Quoll, Pilbara Olive Python, Pilbara Leaf-nosed Bat and Ghost Bat (ENV, 2013). These exclusion zones have been adopted as significant areas in Rio Tinto's SAMP and Rio Tinto has also added a further 68 hectares for the protection of these habitat types (Rio Tinto, 2013). The implementation of a condition which limits clearing in these areas will minimise the impact of the clearing upon significant habitat for fauna.

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

**Methodology** ENV (2013)  
Rio Tinto (2013)

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

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

Threatened Flora species *Lepidium catapycnon* has been recorded from a total of 112 locations within the survey area, including the results of all flora surveys reviewed by ENV (2013). During the current survey, 48 locations were recorded, representing at least 184 individuals, all on the southern slope of Mt Nameless, representing one continuous population. A second population is known from previous surveys to the north of the tailings storage facility, and the location of this population was confirmed during the current survey (ENV 2013).

ENV (2013) recommended an exclusion area for the Mt Nameless population which has been adopted through Rio Tinto's SAMP for Tom Price (Rio Tinto, 2013). This area has been excluded from the clearing permit application area. In addition, Rio Tinto's SAMP identifies two further significant areas of contiguous habitat for protection that are known to support *L. catapycnon*. These areas include the second identified population to the north of the tailings storage facility.

Based on the above, there is potential for the application area to provide habitat for the Threatened Flora species *L. catapycnon*. However, the majority of significant habitat for this species has been removed from the application area based on the results of the targeted survey by ENV (2013). In addition the implementation of a condition to limit clearing within other significant habitat areas and also the application of a Threatened Flora management condition will minimise the risk of disturbance to this species.

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

**Methodology** ENV (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**

A search of available databases revealed there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The buffer for the nearest recorded TEC, Themeda grasslands on cracking clays, is located approximately 14.5 kilometres north of the application area (GIS Database).

No TECs were identified during the flora and vegetation survey conducted by ENV (2013).

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

**Methodology ENV (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 clearing application area falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion in which over 99% of the pre-European vegetation remains (see table) (Government of WA, 2013; GIS Database). This gives the Pilbara IBRA region a conservation status of 'Least Concern' according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002).

The vegetation of the clearing application area has been mapped as Beard vegetation associations:

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;  
162: Shrublands; snakewood scrub; and  
567: Hummock grasslands, shrub steppe; mulga and kanji over soft spinifex and *Triodia basedowii* (Government of WA, 2013; GIS Database).

According to Government of WA (2013), over 99% of all of these vegetation associations remain at a state level and over 98% remain at a bioregional level. These vegetation associations would be given a conservation status of 'Least Concern' at both a state and bioregional level (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.

	Pre-European Area (ha)*	Current Extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,808,657	17,733,583	~99.58	Least Concern	6.3
Beard Veg Assoc. – State					
82	2,565,901	2,553,217	~99.51	Least Concern	10.2
162	547,248	545,772	~99.73	Least Concern	-
567	777,507	774,896	~99.66	Least Concern	22.3
Beard Veg Assoc. – Pilbara Bioregion					
82	2,563,583	2,550,899	~99.51	Least Concern	10.2
162	20,009	19,739	~98.65	Least Concern	-
567	776,824	774,213	~99.66	Least Concern	22.4

\* Government of WA (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 WA (2013)  
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**

ENV (2013) identified 6 vegetation types which are associated with ephemeral watercourses. These represent 2.87 % of the survey area (ENV, 2013). Vegetation association D5 represents the only major ephemeral drainage line covering 0.43% of the survey area (ENV, 2013).

Vegetation types which are associated with ephemeral watercourses are well represented outside of the application area, which remains largely uncleared. These vegetation types represent only a very small proportion of the application area. Therefore, it is unlikely that the proposed clearing will have any significant negative environmental impacts upon watercourses or wetlands. The implementation of a watercourse management condition will minimise the risk of significant impacts upon these vegetation types.

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

**Methodology** ENV (2013)  
GIS Database:  
- Hydrology, Linear

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

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

The application area intersects the Robe, McKay, Boolgeeda, Newman, Platform and Rocklea Land Systems (GIS Database).

The Robe Land System is characterised by low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands (Van Vreeswyk et al., 2004). The system is not generally susceptible to vegetation degradation or erosion (Van Vreeswyk et al., 2004).

The McKay Land system is characterised by hills, ridges, plateaux remnants and breakaways of meta sedimentary and sedimentary rocks supporting hard spinifex grasslands. (Van Vreeswyk et al., 2004). The system is not prone to degradation or soil erosion (Van Vreeswyk et al., 2004).

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 land forms 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).

The Rocklea Land System is characterised by basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). Van Vreeswyk et al. (2004) report that this system has a very low erosion risk.

All of the land systems within the application area have a low risk of erosion. The proposed clearing is to clear 824 hectares, however this amount has already been approved under existing clearing permits. Leaving large areas of land open increases the risk of wind and water erosion. Potential impacts from erosion may be minimised by the implementation of a staged clearing condition. 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 is not located within any conservation areas (GIS Database). The nearest Department of



Parks and Wildlife managed land is Karijini National Park which is located approximately 8 kilometres east of the application area (GIS Database). However, the proposed clearing of 824 hectares has already been approved under existing clearing permits for the Tom Price mine site and there are unlikely to be any additional impacts upon the Karijini National Park.

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 (PDWSA) (GIS Database). The nearest water reserve is Marandoo Water Reserve, a proposed PDWSA, which is approximately 32 kilometres north-east of the application area (GIS Database). The proposed clearing is unlikely to affect the water quality of the water reserve due to the distance between it and the application area.

The groundwater within the application area is between 500 – 1,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. It would not be expected that the proposed clearing would cause salinity levels to alter.

There are no permanent watercourses within the application area. However, there are several ephemeral drainage lines which are only likely to flow following heavy rains (GIS Database). The proposed clearing of 824 hectares has already been approved under existing clearing permits for the Tom Price mine site and surface water management measures are already in place to minimise impacts upon surface water quality.

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

**Methodology** GIS Database:  
- Groundwater Salinity, Statewide  
- 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**

With an average annual rainfall of 400 millimetres and an average annual evaporation rate of 3,400 millimetres there is likely to be little surface flow during normal seasonal rains (GIS Database). Whilst large rainfall events may result in the flooding of the area, the proposed clearing is not likely to lead to an increase in the 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  
- Mean Average Rainfall

## Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

### Comments

There is one Native Title Claim (WC2010/016) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. 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 multiple registered Aboriginal Sites of Significance in the vicinity of 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 Environmental Regulation 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 23 September 2013 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

### Methodology

GIS Database:

- Aboriginal Sites of Significance
- Native Title Claims - Registered with the NNTT

## 4. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. 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.
- ENV (2013) Tom Price Life of Mine Flora, Vegetation and Fauna Assessment. Report Prepared by ENV Australia, January 2013.
- Government of Western Australia (2013) 2013 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, Perth.
- Rio Tinto (2013) Rio Tinto Significant Areas Management Plan, Tom Price Life of Mine. Prepared by Rio Tinto, 2013.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- 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.

## 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

### 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.

### Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare 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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.