



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 5605/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Karara Mining Limited

### 1.3. Property details

Property: General Purpose Lease 59/38  
Mining Lease 59/649  
Miscellaneous Licence 59/115  
Miscellaneous Licence 59/120  
Local Government Area: Shire of Perenjori  
Colloquial name: Syncline Turner Haul Road Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
36		Mechanical Removal	Haul Road

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 25 July 2013

## 2. Site Information

### 2.1. Existing environment and information

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

**Vegetation Description** Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation in a regional context. The following Beard vegetation associations are located within the application area (GIS Database):

358: Shrublands; bowgada and *Acacia quadrimarginea* on stony ridges;  
363: Shrublands; bowgada scrub with scattered cypress pine; and  
420: Shrublands; bowgada and jam scrub.

Vegetation mapping has been sourced from the latest regional vegetation mapping undertaken for the Greater Karara Project area. This was conducted by Woodman Environmental Consulting (WEC) over a three year period with surveying undertaken in September and October 2008; May, July, August, October, November and December 2009; and September, October, November and December 2010 and January 2011 (WEC, 2012). According to Karara Mining Limited (KML), the following ten floristic community types (FCTs) mapped by WEC (2012) occur within the application area:

#### 1. FCT 7

Tall closed shrubland to tall open shrubland of mixed *Acacia* species including *Acacia latior* and *A. sibina* with low isolated clumps of trees of mixed *Eucalyptus* spp. over low sparse shrubland of mixed species including *Dianella revoluta* over low isolated clumps of grasses of *Monachather paradoxus* and *Amphipogon caricinus* subsp. *caricinus* on red-brown silty clay loam with ironstone gravel on flats to lower slopes.

#### 2. FCT 8

Tall closed shrubland to tall open shrubland of mixed species including *Acacia latior* and *Melaleuca nematophylla* over mid open shrubland to mid sparse shrubland of mixed species including *Aluta aspera* subsp. *hesperia* on red or red-brown sandy loam or clay loam on flats to upper slopes.

#### 3. FCT 10

Tall closed shrubland to tall open shrubland of mixed *Acacia* species dominated by *Acacia assimilis* subsp. *assimilis* over mid open shrubland to mid sparse shrubland of mixed species including *Aluta aspera* subsp. *hesperia*, *Eremophila latrobei* subsp. *latrobei* and *Philotheca sericea* on red or red-brown silty clay loam or clay loam with ironstone gravel on flats to crests (primarily midslopes).

#### 4. FCT 11

Tall shrubland of mixed *Acacia* species including *Acacia burkittii* and *A. sibina* over mid shrubland to mid sparse shrubland of mixed species including *Aluta aspera* subsp. *hesperia*, *Eremophila forrestii* subsp. *forrestii* and *Grevillea obliquistigma* subsp. *obliquistigma* over low isolated clumps of grasses of *Amphipogon caricinus* subsp. *caricinus* on red or brown sandy loam or clay loam of flats to upper slopes.

5. FCT 12  
Tall shrubland of mixed *Acacia* species including *Acacia ramulosa* var. *ramulosa*, *A. sibina* and *A. effusifolia* over mid open shrubland to mid sparse shrubland of mixed species including *Aluta aspera* subsp. *hesperia*, *Philotheca brucei* subsp. *brucei*, *Eremophila latrobei* subsp. *latrobei*, *E. clarkei*, *E. forrestii* subsp. *forrestii* over low isolated clumps of ferns of *Cheilanthes sieberi* over low isolated clumps of grasses of *Monachather paradoxus* on red, brown or red-brown silty clay loam or silty loam on flats to lower slopes.
6. FCT 19a  
Low woodland to low open woodland of *Eucalyptus loxophleba* subsp. *supralaevis* over tall open shrubland of mixed species including *Acacia tetragonophylla* over mid sparse shrubland of mixed species including *Senna artemisioides* subsp. *filifolia* and *Rhagodia drummondii* over low sparse chenopod shrubland of mixed species including *Enchylaena tomentosa* var. *tomentosa*, *Sclerolaena diacantha*, *S. fusiformis* and *Maireana carnosae* over low isolated clumps of grasses of *Austrostipa elegantissima* on red to red-brown clay loam or silty clay with ironstone gravel on drainage lines, flats to mid slopes.
7. FCT 21b  
Tall shrubland of *Melaleuca eleuterostachya* and *Acacia ?caesaneura* ms surrounding disturbed clay pan.
8. FCT 23  
Tall shrubland to tall open shrubland of *Acacia* species including *Acacia ramulosa* var. *ramulosa*, *A. tetragonophylla*, *A. burkittii* over low sparse shrubland of mixed species including *Solanum lasiophyllum* and *Ptilotus obovatus* over low isolated clumps of grasses of *Austrostipa elegantissima* and *Monachather paradoxus* on red or red-brown clay loam or silty clay loam on flats.
9. FCT 26  
Tall shrubland to tall open shrubland of mixed species including *Acacia ramulosa* var. *ramulosa*, *A. tetragonophylla*, *A. assimilis* subsp. *assimilis* and *Hakea recurva* subsp. *recurva* with low isolated clumps of trees of *Eucalyptus* spp. over low sparse shrubland of *Senna artemisioides* subsp. *filifolia* and *Rhagodia drummondii* over low isolated clumps of grasses of *Austrostipa elegantissima* on red or red-brown clay loam or sandy clay loam on flats to mid slopes.
10. FCT 28  
Tall shrubland to tall open shrubland of *Acacia* species including *Acacia ramulosa* var. *ramulosa*, *A. tetragonophylla* and *A. burkittii* over mid sparse shrubland of species including *Eremophila clarkei*, *E. oldfieldii*, *Solanum lasiophyllum*, *Scaevola spinescens*, and *Dodonaea inaequifolia* on red or red-brown clay loam or silty clay loam with ironstone gravel on flats to mid slopes of low hills.

<b>Clearing Description</b>	<p>Karara Mining Limited (KML) has applied to clear 36 hectares within an application area of approximately 121 hectares (GIS Database). The application area is located approximately 65 kilometres north east of Perenjori (GIS Database).</p> <p>The purpose of the application is to construct the Syncline Turner Haul Road which will connect the Mungada Iron Ore Project (MIOP) to the Minjar Haul Road and will allow for the haulage of iron ore from satellite mining operations (in particular the Shine Iron Ore Project) to the crushing and screening plant at the Blue Hills North mine site (part of the MIOP) (KML, 2013b). The road is approximately 13 kilometres with an estimated width of no greater than 25 metres (KML, 2013b). The proposed disturbance footprint also includes topsoil stockpiles. Clearing will be by mechanical means. Topsoil and felled material will be stockpiled for later reuse for rehabilitation (KML, 2013b).</p>
<b>Vegetation Condition</b>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994);</p> <p>To</p> <p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).</p>
<b>Comment</b>	<p>The vegetation condition has been inferred from aerial photography and two flora and vegetation surveys undertaken over the majority of the application area. These were undertaken by Jennifer Borger (botanical consultant) on 10 and 11 August 2011 (Borger, 2011) and 6 September 2012 (Borger, 2012).</p> <p>The Borger September 2012 survey (conducted over 2.7 kilometres of the proposed haul road) was conducted under slightly drier conditions than in 2011. This resulted in a sparser germination of groundcover species and possibly less diversity (Borger, 2012).</p>

### 3. Assessment of application against clearing principles

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

**Comments**      **Proposal is at variance to this Principle**

The majority of the application area has been covered by two flora and vegetation surveys conducted by Jennifer Borger (botanical consultant). The first was conducted on 10 and 11 August 2011 (Borger, 2011). The second was conducted on 6 September 2012 after the proposed haul road was modified to exclude Mining Lease 59/650 (provided as an offset for the Greater Karara Iron Ore Project) (KML, 2013b). This survey was conducted over the new portion of the proposed haul road (approximately 2.7 kilometres in the centre of the application area) (Borger, 2012). The western end of the application area was not surveyed by Borger, however, this area is covered by two series of regional vegetation mapping undertaken by WEC. The first was undertaken in June and August 2006 (WEC, 2008) and the second was undertaken from 2008 to 2011 (WEC, 2012).

Borger (2011) compared vegetation communities mapped at each survey site to those mapped by WEC in

2006 (WEC, 2008). These vegetation communities were considered to broadly fit into several of the WEC (2008) floristic community types (FCTs) or combinations of FCTs. In the second survey Borger (2012) compared vegetation communities to those mapped by WEC in 2008 to 2011 and found that vegetation community mapping agreed with regional vegetation mapping by WEC (2012).

No Threatened Ecological Communities have been recorded within the application area (GIS Database; KML, 2013b). The application area is located within the Priority 1 Blue Hills (Mount Karara/Mungada Ridge/Blue Hills) vegetation complexes (banded ironstone formation (BIF)) Priority Ecological Community (PEC) (GIS Database). The BIF ranges located at Mount Karara/Blue Hills/Mungada are noted as having very high biodiversity conservation values (Government of Western Australia, 2007). Available databases indicate the application area is located in the flatter parts of the landscape (GIS Database).

Regional vegetation mapping undertaken in 2006 identified several FCTs that occur on landforms that are restricted within the region and are not represented or poorly represented based on the regional quadrat dataset from Markey and Dillon (2006) (cited in WEC, 2008). Two of these FCTs were mapped by Borger (2011) within the application area including FCT 8 (on upper slopes and crests with BIF outcropping) and FCT 12 (on flats to mid-upper slopes with ironstone gravels). Borger (2011) identified these as having high conservation significance and as being listed as the Blue Hills PEC. Borger (2011) also states a small area of PEC possibly occurs at sites 27 to 29 (mapped as FCT 12). WEC (2008) mapped approximately 386 hectares and 642 hectares of FCTs 8 and 12, respectively. According to KML (2013a), approximately 0.18 hectares of FCT 8 and 9.50 hectares of FCT 12 occurs in the application area which represents approximately 0.05% and 1.5% of the mapped areas of FCT 8 and FCT 12, respectively.

Several of the FCTs mapped in 2008 to 2011 (WEC, 2012) were also identified as having conservation significance. These occur on BIF formations or high in the landscape on restricted landforms in the region and have the potential to occur within the Blue Hills PEC (Borger, 2012). Two of these FCTs occur within the application area including FCT 10 (on flats to crests (primarily midslopes)) and FCT 12 (on flats to lower slopes). WEC (2012) mapped approximately 3,034 hectares and 2,416 hectares of FCTs 10 and 12, respectively. According to KML (2013b), approximately 17.04 hectares of FCT 10 and 4.08 hectares of FCT 12 occurs in the application area which represents approximately 0.56% and 0.17% of the mapped areas of FCT 10 and FCT 12, respectively.

KML (2013b) will manage vegetation clearing and disturbance to the PEC through its Construction Environmental Management Plan, Approvals Request and Ground Disturbance Procedure and Flora, Weeds and Plant Pathogens Procedure. Given the application area is generally located on flatter parts of the landscape and has low representation of conservation significant FCTs, the proposed clearing is considered unlikely to have a significant impact on the PEC or the conservation significant FCTs.

A total of 144 flora species and 82 flora species were recorded during the August 2011 and September 2012 surveys, respectively (Borger, 2011; Borger, 2012). Three introduced species were recorded including Ice plant (*Mesembryanthemum nodiflorum*), *Spergula pentandra* and *Hypochaeris glabra*. For the WEC (2012) regional mapping survey area, a total of 640 vascular flora taxa, 2 hybrids and 14 putative hybrids, from 70 families and 241 genera were recorded. Of these taxa, 41 introduced (weed) taxa were recorded (WEC, 2012). Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

No Threatened Flora have been recorded within the application area (GIS Database; KML, 2013b). Five Priority Flora species were recorded within the application area (KML, 2013b). These include:

- *Acacia karina* (Priority 2) - A total of 11 plants were recorded within the application area. This represents 0.005% of the total surveyed population of 234,153 plants. The proposed disturbance footprint does not impact on this species.
- *Polianthion collinum* (Priority 3) - A total of 62 plants were recorded within the application area. This represents 0.68% of the total surveyed population of 9,091 plants. The proposed disturbance footprint impacts on 10 plants which represents 0.11% of the surveyed population.
- *Persoonia pentasticha* (Priority 3) - A total of two plants were recorded within the application area. The proposed disturbance footprint impacts on both plants which represents 0.20% of the surveyed population.
- *Spartothamnella sp. Helena & Aurora Range* (Priority 3) - Two plants were recorded within the application area, one of which will be impacted by the proposed disturbance footprint. Only nine plants have been recorded in surveyed areas to date, however, this species has been recorded from the Avon Wheatbelt, Coolgardie, Murchison and Yalgoo bioregions and is known from 24 records (Western Australian Herbarium, 2013).
- *Micromyrtus acuta* (Priority 3) - One plant was recorded within the application area and will not be impacted by the proposed clearing. Three plants were also recorded outside the application area (KML, 2013b).

Borger (2011) also recorded 141 *Drummondita fulva* (Priority 3) plants outside the application area. Based on the proposed impacts and the populations recorded outside of the application area, it is unlikely the proposed clearing will have a significant impact on these species. Given the Borger surveys did not cover the western end of the application area, it is possible that further conservation significant flora occurs in the application area. Potential impacts to conservation significant flora may be minimised by the implementation of a flora management condition for the western end of the application area.

A Level 2 fauna survey over the Greater Karara Project area recorded a total of 133 vertebrate fauna species including two frog, 38 reptile, 75 bird and 18 mammal species (Bamford Consulting Ecologists (BCE), 2007).

The area was found to support a rich faunal assemblage. The highest biodiversity, particularly for birds, occurred on the lower slopes of the ridges whereas the ridges, whilst rare habitats, were not especially important for biodiversity (BCE, 2007). Contributing factors to faunal richness are the biogeographical location of the area, with faunal elements from the South-West, Murchison and arid zone effectively overlapping, and habitat diversity, linked to the presence of the ironstone ridges (BCE, 2007). The project area is also likely to support a rich assemblage of invertebrates (BCE, 2007).

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

**Methodology** BCE (2007)  
Borger (2011)  
Borger (2012)  
Government of Western Australia (2007)  
KML (2013a)  
KML (2013b)  
WEC (2008)  
WEC (2012)  
GIS Database:  
- Threatened and Priority Flora  
- Threatened Ecological Sites Buffered  
- Topography Contours, Statewide

**(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 Level 2 fauna survey has been undertaken by BCE for the proposed Karara and Mungada iron ore mines. Field surveys were undertaken in April, August and October 2006 around Karara ridge, Blue Hills ridge, Terapod, Mungada ridge and Jasper Hills (BCE, 2007). The survey areas are mostly located outside the application area to the west and south, with only a portion of a Malleefowl (*Leipoa ocellata*) (Vulnerable; Schedule 1) search area intersecting the western end of the application area. However, as the surveys were undertaken in the local area the results are considered applicable.

Two targeted fauna surveys have been undertaken over the majority of the application area for the Malleefowl, Western Spiny-tailed Skink (*Egernia stokesii badia*) (Vulnerable; Schedule 1) and Shield-backed Trapdoor Spider (*Idiosoma nigrum*) (Vulnerable; Schedule 1). The first survey was conducted by BCE on 6 to 8 August and 27 August 2011 (BCE, 2011). The second survey was conducted over the new section of the proposed haul road after it was modified to exclude Mining Lease 59/650. This survey involved a field inspection by three KML personnel on 6 September 2012 and was reported by BCE in an addendum to the August 2011 survey report (BCE, 2013). The inspection involved searching the new section for Malleefowl mounds and checking large Eucalypt trees (especially those with many fallen branches) for evidence of the Western Spiny-tailed Skink. Burrows of the Shield-backed Trapdoor Spider are more difficult to identify, therefore, the results of the inspection were supplemented with vegetation mapping (BCE, 2013). The western end of the application area was not covered by the August 2011 or September 2012 field surveys. However, BCE has visited most of this area previously when conducting Western Spiny-tailed Skink and Shield-backed Trapdoor Spider surveys (BCE, 2013). An assessment of this area by BCE is also included in the addendum to the August 2011 survey report.

The Level 2 fauna survey identified several habitats as significant fauna habitat. This included ironstone ridges, lower slopes of ironstone hills where water is concentrated creating dense vegetation, temporary wetlands and well developed Eucalypt woodlands (BCE, 2007). Mungada Ridge was identified as a particularly well developed example of the rocky habitat and associated dense vegetation on the lower slopes, however, this ridge is not located within the application area (KML, 2013a). Of these significant habitats, the lower slopes of ironstone hills and possibly the well developed eucalypt woodlands are considered most relevant to the application area. BCE (2007) classifies the lower slopes habitat as Land System 2 as described by Landloch (2006) (cited in BCE, 2007). Mapping in BCE (2007) indicates the majority of this land system occurs outside the application area. Regional vegetation mapping by WEC (2012) indicates there is one floristic community type (FCT) in the application area that comprises Eucalypt woodland (FCT 19a). This is described as low woodland to low open woodland and comprises 41.77 hectares of the application area. This FCT has been mapped over an area of 16,009 hectares and is, therefore, considered to be well represented outside the application area.

The Level 2 fauna survey recorded a total of 133 vertebrate fauna species including two frog, 38 reptile, 75 bird and 18 mammal species (BCE, 2007). Several conservation significant fauna species were recorded or listed as likely to be present within the survey area. Those recorded include the Malleefowl, Shield-backed Trapdoor Spider, Gilled Slender Blue-tongue (*Cyclodomorphus branchialis*) (Schedule 1), Rainbow Bee-eater (*Merops ornatus*) (Marine; Migratory under EPBC Act, Schedule 3), Peregrine Falcon (*Falco peregrines*) (Schedule 4), Major Mitchell's Cockatoo (*Cacatua leadbeateri*) (Schedule 4), the White-browed Babbler (potentially *Pomatostomus superciliosus ashbyi* which is listed as Priority 4) and the Crested Bellbird (potentially *Oreoica gutturalis gutturalis* which is listed as Priority 4) (BCE, 2007). Targeted fauna surveys have been conducted for the Malleefowl, Western Spiny-tailed Skink and Shield-backed Trapdoor Spider. For the remainder of the conservation significant species recorded, the application area is considered unlikely to comprise significant

habitat given the availability of suitable habitat in the local area or better representation of preferred or core habitat (such as ironstone ridges) outside the application area.

The Level 2 fauna survey recorded 81 Malleefowl mounds over a search area of 500 hectares (BCE, 2007). Of these six were active mounds and three were recently used mounds (one to five years old). Mounds were recorded on ridges and plains but were found to be concentrated on the lower to mid slopes of the ridges favouring gravelly to stony soils (BCE, 2007). Based on surveys undertaken to date KML (2013b) estimates there is approximately 8,715 hectares of suitable habitat for the Malleefowl in the Karara area.

No active Malleefowl mounds were recorded during the August 2011 and September 2012 field surveys and the closest active mound on KML's records is approximately 500 metres north of the application area (KML, 2013b). One inactive mound (unused for over 20 years) was recorded approximately six metres north of the application area during the September 2012 field survey (KML, 2013b). BCE (2013) notes the new section surveyed in September 2012 is expected to have little impact on the Malleefowl. Several very old and barely recognisable mounds were found in the August 2011 field survey, however, it was considered unlikely that these would be used again (BCE, 2013). Fresh Malleefowl tracks were also observed in the western portion of the application area during the August 2011 survey (BCE, 2011). The western end of the application area is considered to contain some potentially suitable habitat for the Malleefowl and may therefore support Malleefowl mounds (BCE, 2013). Potential impacts to the Malleefowl may be minimised by the implementation of a fauna management condition for the western end of the application area.

No evidence of the Western Spiny-tailed Skink was recorded during the Level 2 fauna survey (BCE, 2007). The August 2011 survey identified little suitable habitat for the Western Spiny-tailed Skink in the survey area (BCE, 2011). BCE (2011) notes some patches of Eucalypt woodland with a few logs were present, however, most were too small, termite-infested or filled with mud and the few large logs present were searched with no evidence of the skink found. However, scats were recorded at three locations during the survey, suggesting the skink may move through the area (BCE, 2011). Prior to clearing these locations, KML (2013b) will survey for Western Spiny-tailed Skink and any identified will be translocated in accordance with their Western Spiny-tailed Skink Management, Monitoring and Translocation Procedure. No evidence of the Western Spiny-tailed Skink was recorded in the new section of the proposed haul road and BCE (2013) expects this section to have little impact on the skink. The western end of the application area is considered to contain some potentially suitable Eucalypt woodland and may therefore support the Western Spiny-tailed Skink (BCE, 2013). Potential impacts to the Western Spiny-tailed Skink may be minimised by the implementation of a fauna management condition for the western end of the application area.

The Level 2 fauna survey also recorded the Shield-backed Trapdoor Spider. This species was found in gravelly-loam soils on the mid slopes of the Mungada Ridge, a ridge just south of Blue Hills and Jasper Hills (BCE, 2007). Surveys in the Karara area have found the species to be widespread on the mid to lower slopes of hills (BCE, 2011b) (cited in KML, 2013b).

The August 2011 survey involved searching 69 quadrats for the presence or absence of the Shield-backed Trapdoor Spider, rather than the abundance of burrows (BCE, 2011). Twelve quadrats were found to contain spider burrows, seven of which are located within the application area (mostly on the edge of the application area). According to BCE (2011), the habitat was not generally considered ideal for the spider, with much of the project area located on plains adjacent to ridges, with Acacia shrubland on clayey-loam soil. However, the small ridge to the east of the survey area represents suitable habitat being Acacia on loam with cobbles and some rock outcropping on the lower to upper slopes of a small ironstone ridge (BCE, 2011). Twenty spider burrows were recorded in the area of the ridge, with five out of eight quadrats recording spiders. KML (2013a) states that minimising ground disturbance to this small elevation was considered whilst not comprising safety and line of sight. Three spider burrows were also recorded on the lower slopes of Terapod in the west of the survey area (BCE, 2011). Of the burrows recorded only one will be impacted (KML, 2013b).

No burrows were identified during the September 2012 field inspection, however, these are difficult to identify without considerable experience (BCE, 2013). According to BCE (2013), the new section does pass through one FCT (FCT 10) considered suitable for the Shield-backed Trapdoor Spider. This FCT is located on flats to crests but is considered suitable where it is high in the landscape and the soils are gravelly. BCE (2013) states that in the absence of field data, it has to be assumed that this area of FCT 10 does support the spider. According to KML (2013a), approximately 7.47 hectares of this area of FCT 10 is considered prospective habitat and approximately 2.09 hectares of this will be impacted by the proposed clearing. Approximately 0.56% of the total mapped area of FCT 10 occurs within the application area indicating this habitat is well represented outside the application area. In the western section of the application area, it comes very close to the spider distribution on Terapod and Blue Hills North and very likely intersects with at least low densities of spiders (i.e. the edge of the distribution) (BCE, 2013).

BCE (2013) also provides mapping of the predicted distribution of the Shield-backed Trapdoor Spider based on interpretation of FCT mapping and contours and previous experience with the species in these areas. This map also includes spider burrows found in the area. It shows that the application area comprises only a small portion of the predicted distribution and highlights that the spiders tend to have a higher occurrence where the terrain appears to be steeper. KML (2013a, 2013b) estimates that approximately 3,057 hectares of suitable habitat occurs within the Karara area with approximately 21.10 hectares of suitable habitat and 7.47 hectares of prospective habitat occurring within the application area. Karara (2013a) states that approximately 5.65 hectares of suitable habitat and 2.09 hectares of prospective habitat will be impacted by the proposed clearing. Whilst suitable habitat is present within the application area and burrows have been recorded, the application

area is unlikely to comprise significant habitat for the species in the local area.

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

**Methodology** BCE (2007)  
BCE (2011)  
BCE (2013)  
KML (2013a)  
KML (2013b)  
WEC (2012)

**(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**

According to available databases (GIS Database) and KML (2013b), there are no records of Threatened Flora within the application area. No Threatened Flora was recorded during the Borger August 2011 and September 2012 flora and vegetation surveys (Borger, 2011; Borger, 2012). However, available databases show there are numerous records of Threatened Flora within ten kilometres of the application area, with the closest record being approximately 850 metres east, north east of the application area (GIS Database). Based on this and given the Borger surveys did not cover the western end of the application area, it is possible that Threatened Flora species occur in this portion of the application area. Potential impacts to Threatened Flora may be minimised by the implementation of a flora management condition for the western end of the application area.

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

**Methodology** Borger (2011)  
Borger (2012)  
KML (2013b)  
GIS Database:  
- Threatened and Priority Flora

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

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

According to available databases (GIS Database) and KML (2013b), there are no known Threatened Ecological Communities (TECs) within the application area. The nearest known TEC is approximately 50 kilometres south west of the application area (GIS Database).

No TECs were recorded during the Borger August 2011 and September 2012 flora and vegetation surveys (Borger, 2011; Borger, 2012).

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

**Methodology** Borger (2011)  
Borger (2012)  
KML (2013b)  
GIS Database:  
- Threatened Ecological Sites Buffered

**(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.**

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

The application area falls within the Yalgoo Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 97.38% of the pre-European vegetation remains (see table) (GIS Database; Government of Western Australia, 2013).

The vegetation of the application area has been mapped as Beard vegetation associations 358, 363 and 420 (GIS Database). Over 95% of these Beard vegetation associations remain at both a state and bioregional level (Government of Western Australia, 2013). Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared. A review of aerial imagery also shows that vegetation within the application area is not a remnant within the local area (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DEC Managed Lands
IBRA Bioregion – Yalgoo	5,057,326	4,924,606	~97.38	Least Concern	31.69
Beard veg assoc. – State					
358	59,719	59,577	~99.76	Least Concern	35.29
363	247,655	247,470	~99.93	Least Concern	79.75
420	859,632	830,218	~96.58	Least Concern	14.17
Beard veg assoc. – Bioregion					
358	55,530	55,448	~99.85	Least Concern	31.23
363	246,250	246,065	~99.92	Least Concern	79.92
420	621,396	620,266	~99.82	Least Concern	16.47

\* Government of Western Australia (2013)

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

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

**Methodology** Department of Natural Resources and Environment (2002)  
Government of Western Australia (2013)  
GIS Database:  
- IBRA WA (Regions - Sub Regions)  
- Pre-European Vegetation  
- Rothsay 50cm Orthomosaic - Landgate 2006

**(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

**Comments Proposal is at variance to this Principle**

There are six minor, non perennial watercourses intersecting the application area as well as one small non perennial lake (GIS Database). Available databases show there are numerous non perennial watercourses within the surrounding area (GIS Database).

No vegetation was identified as growing in association with a watercourse (KML, 2013b). One floristic community type (FCT 21b) was identified as growing in association with a drainage depression (KML, 2013b). This is described as 'Tall shrubland of *Melaleuca eleuterostachya* and *Acacia ?caesaneura* ms surrounding disturbed clay pan' (WEC, 2012). This area was similarly described by WEC (2008) which gave it a low conservation significance rating.

KML (2013b) states the proposed haul road will cross some very minor drainage lines that flow during heavy rainfall and that construction will not cause any change to the drainage characteristics of the area. Negligible impact will occur on any surface water dependant vegetation from the construction and operation of the proposal (Borger 2012, personal communication) (cited in KML, 2013b).

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

**Methodology** KML (2013b)  
WEC (2008)  
WEC (2012)  
GIS Database:  
- Hydrography, linear  
- Rivers

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

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

The application area has been mapped as occurring on the Tealoo, Tallering, Pindar and Moriarty land systems (GIS Database). The Pindar and Tealoo land systems are generally not prone to erosion (Payne et al., 1998). Slopes of low rises without protective stone mantles, alluvial plains and narrow drainage tracts within the Moriarty land system are moderately susceptible to water erosion, particularly if perennial shrub cover is substantially reduced or the soil surface is disturbed (Payne et al., 1998). Stone mantles provide effective protection against soil erosion in the Tallering land system however, disturbance or removal of stone mantles

may initiate erosion (Payne et al., 1998). Based on the above, there is potential for erosion to occur. Potential impacts from erosion as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

Potential surface water ponding and waterlogging impacts from high rainfall events will be considered during the design of the haul road (KML, 2013b). These impacts and any potential flooding will be minimised by allowing sufficient drainage in the design of the haul road (i.e. use of culverts particularly in valley floors) (KML, 2013b).

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

**Methodology** KML (2013b)  
Payne et al. (1998)  
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 at variance to this Principle**

The application area is located within two conservation areas, being the former Karara and Warriedar pastoral leases (GIS Database). These former leases are proposed for conservation and are managed by the Department of Parks and Wildlife (DPAW) (formerly the Department of Environment and Conservation (DEC)). The former Karara and Warriedar pastoral leases contain banded ironstone formations (BIFs) that comprise a high level of biological diversity (Government of Western Australia, 2007). In particular, the BIF ranges located at Mount Karara/Blue Hills/Mungada have very high biodiversity conservation values (Government of Western Australia, 2007). The Environmental Protection Authority's (EPA's) assessment of KML's Mungada Iron Ore Project noted the Government's intention to accept relinquishment of mining tenements (includes Mining Lease 59/650) over a portion of the Mungada Ridge for the creation of a Class 'A' Nature Reserve (EPA, 2009). The application area is located in the Mungada Ridge/Blue Hills area, however, mapping provided in the EPA's assessment indicates the application area is located outside Mungada Ridge and ridges associated with Blue Hills. Available databases indicate the application area is located in the flatter parts of the landscape (GIS Database). The proposed haul road has also been modified to exclude Mining Lease 59/650.

Advice from DEC (now DPAW) focused on Priority Flora, conservation significant FCTs, the Malleefowl, Western Spiny-tailed Skink and Shield-backed Trapdoor Spider and recommended impacts to these values are avoided or minimised (DEC, 2013). An assessment of these values is provided in Principles (a) and (b). For the Malleefowl, DEC (2013) recommended management strategies to reduce the likely impacts of road kill. Management measures that will be undertaken by KML are contained within the Malleefowl Monitoring and Management Procedure (KML, 2013a). According to KML (2013a), this procedure was approved by DEC in October 2009 and regular reviews with DEC have been undertaken (most recent being May 2013). This procedure includes legal requirements, monitoring and reporting, incident reporting and investigations, internal approval procedures, staff training (sightings, incident reporting, avoidance of mound buffers and traffic rules) and other management measures (KML, 2013a).

The proposed clearing may also increase the spread and occurrence of weeds within the proposed conservation areas. Potential impacts on the former leases and Mungada Ridge may be minimised by the implementation of flora and fauna conditions in the western end of the application area and staged clearing and weed management conditions.

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

**Methodology** DEC (2013)  
EPA (2009)  
Government of Western Australia (2007)  
KML (2013a)  
GIS Database:  
- DEC Tenure  
- Topography Contours, Statewide

**(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).

There are no permanent waterbodies or watercourses within the application area, however, there are several non-perennial watercourses and a small non-perennial lake that occur within the application area (GIS Database). The annual average rainfall for Yalgoo is 259.7 millimetres and the average annual evaporation rate for the application area is between 2,800 and 3,000 millimetres (BoM, 2013; GIS Database). Based on these averages, any surface water within the application area is likely to only remain for short periods following



significant rainfall events.

KML (2013b) states the proposed haul road will cross some very minor drainage lines that flow during heavy rainfall and that construction will not cause any change to the drainage characteristics of the area. Several sediment and erosion control measures are proposed including reinstating natural drainage patterns where practicable, consideration of possible erosion issues in drainage control measures and constructing slope lengths and angles to be compatible with the surrounding landscape and resistant to erosion (KML, 2013b).

According to available databases, groundwater salinity within the application area is between 3,000 and 7,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered brackish to saline. No groundwater dependant vegetation occurs within the vicinity of the proposal (Borger 2012, personal communication) (cited in KML, 2013b). The proposed clearing is not expected to cause salinity levels within the application area to alter.

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

**Methodology** BoM (2013)  
KML (2013b)  
GIS Database:  
- Evaporation Isopleths  
- 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**

The application area is located within the Yarra Monger catchment area (GIS Database). Given the size of the area to be cleared (36 hectares) in relation to the size of the catchment area (4,182,476 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

With an average annual rainfall of 259.7 millimetres at Yalgoo and an average annual evaporation rate of between 2,800 and 3,000 millimetres for the application area there is likely to be little surface flow during normal seasonal rains (BoM, 2013; GIS Database). Whilst large rainfall events may result in flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

**Methodology** BoM (2013)  
GIS Database:  
- Hydrographic Catchments – Catchments  
- Rainfall, Mean Annual

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

**Comments**

There are three native title claims over the area under application: WC96/98, WC97/72 and WC12/5 (GIS Database). One claim has been filed at the federal court and the other two claims have been registered with the Native Title Tribunal on behalf of the claimant groups. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

According to available databases, there is one registered Aboriginal Site of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation (formerly the Department of Environment and Conservation) and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

It is noted that the proposed clearing may impact on a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) for environmental impact assessment under the EPBC Act. The proponent is advised to contact the SEWPAC for further information regarding notification and referral responsibilities under the EPBC Act.

The clearing permit application was advertised on 20 May 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 – Filed at the Federal Court
  - Native Title Claims – Registered with the NNTT

#### 4. References

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- KML (2013a) Further Information provided to the assessing officer by Karara Mining Limited on 26 June 2013, 1 July 2013 and 23 July 2013.
- KML (2013b) Native Vegetation Clearing Permit Application Syncline Turner Haul Road. Unpublished Report Prepared by Karara Mining Limited, April 2013.
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- WEC (2008) Gindalbie Metals Ltd Karara – Mungada Project Survey Area Flora and Vegetation. Unpublished report prepared by Woodman Environmental Consulting for Gindalbie Metals Ltd dated May 2008.
- WEC (2012) Karara Mining Limited Regional Flora and Vegetation Survey of the Karara to Minjar Block. Unpublished report prepared by Woodman Environmental Consulting for Karara Mining Limited dated June 2012.

#### 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.