



1. Application details

1.1. Permit application details

Permit application No.: 2999/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Pilbara Manganese Pty Ltd

1.3. Property details

Property: Mining Lease 45/429
Mining Lease 45/430
Local Government Area: Shire Of East Pilbara
Colloquial name: Lucy Mack Project

1.4. Application

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

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>Beard Vegetation Associations have been mapped at a scale of 1:250,000 for the whole of Western Australia. Two Beard Vegetation Associations are located within the application area (Shepherd et al., 2001):</p> <p>Beard Vegetation Association 173: hummock grasslands, shrub steppe; kanji over soft spinifex and <i>Triodia wiseana</i> on basalt; and</p> <p>Beard Vegetation Association 177: hummock grasslands, sparse shrub steppe; <i>Acacia bivenosa</i> over hard spinifex <i>Triodia brizoides</i>.</p> <p>Mattiske Consulting has conducted two flora and vegetation surveys that included the application area. The flora and vegetation surveys were both conducted in May 2007. One of the surveys covered Mining Lease 45/429 whilst the other flora and vegetation survey covered Mining Lease 45/430 (Mattiske Consulting, 2007a; 2007b). In addition to the surveys, MBS Environmental (2009) has provided vegetation community maps of the project area. Sixteen vegetation communities have been identified throughout the Woodie Woodie tenements, six of which have been mapped as occurring within the application area (MBS Environmental, 2009):</p> <ol style="list-style-type: none"> Shrub or Thicket of <i>Carissa lanceolata</i>, <i>Petalostylis labicheoides</i>, <i>Acacia bivenosa</i> and <i>Acacia ancistrocarpa</i> over <i>Triodia pungens</i>, <i>Triodia basedowii</i>, <i>Cenchrus ciliaris</i> and <i>Chrysopogon fallax</i> along minor watercourses. Scrub or Low Shrubland of <i>Acacia ancistrocarpa</i>, <i>Acacia arida</i>, <i>Acacia acradenia</i>, <i>Petalostylis labicheoides</i>, <i>Gossypium australe</i>, <i>Acacia synchronicia</i> and <i>Acacia inaequilatera</i> over <i>Triodia longiceps</i> and <i>Triodia wiseana</i> with patches of <i>Cenchrus ciliaris</i> on flats, often associated with major watercourses. Low shrubland of <i>Acacia arida</i> and <i>Acacia hilliana</i> over <i>Triodia wiseana</i> and <i>Dampiera candidans</i> on slopes and 	<p>Pilbara Manganese (2009) proposes to clear up to 50 hectares of vegetation for the development of the Lucy Mack project. The Lucy Mack project will consist of an open pit, waste rock stockpiles, Run of Mine (ROM) pad, haul roads and other associated infrastructure (MBS Environmental, 2009). The application area is located approximately 120 kilometres east of Nullagine (GIS Database).</p> <p>Vegetation will be cleared by mechanical means using a bulldozer (Pilbara Manganese, 2009). All vegetative material and topsoil from cleared areas will be stockpiled and used for future rehabilitation purposes (Pilbara Manganese, 2009).</p>	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).</p> <p>To</p> <p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).</p>	<p>The vegetation condition rating was based on the flora and vegetation surveys of the proposed clearing area which were conducted by Mattiske Consulting in May 2007.</p> <p>Mattiske Consulting (2007a) reports that the vegetation within Mining Lease 45/429 is generally in good condition apart from disturbed and rehabilitated areas in the north of the tenement. Mattiske Consulting (2007b) describes the vegetation within Mining Lease 45/430 as being in very good condition apart from localised disturbances around roads, tracks and drill sites. Mattiske Consulting (2007b) reports that cattle grazing has led to degradation in some areas within Mining Lease 45/430.</p>

hilltops.

- 4) Hummock Grassland of *Triodia longiceps* with scattered *Acacia bivenosa*, *Acacia synchronicia* and *Acacia ptychophylla* on flats and lower slopes.
- 5) Hummock Grassland of *Triodia longiceps* and *Triodia wiseana* with occasional *Grevillea wickhamii* subsp. *hispidula* on flats and lower slopes.
- 6) Closed Bunch Grassland of *Cenchrus ciliaris* and *Triodia longiceps* with scattered *Acacia bivenosa* and *Acacia trachycarpa* shrubs on red sandy flats.

3. Assessment of application against clearing principles

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

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

The application area is located within the Chichester subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). The Chichester subregion is characterised by undulating Archaean granite and basalt plains with significant areas of basaltic ranges (CALM, 2002). At a broad scale, vegetation can be described as shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands on plains, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002).

The application area contains several small hills with a maximum elevation of 320 metres Australian Height Datum (AHD) (MBS Environmental, 2009). Rocky outcrops occur in parts of the application area (MBS Environmental, 2009). Within the application area minor drainage lines exist that flow north-west into the Oakover River, located approximately 6 kilometres from the application area (MBS Environmental, 2009). The flows within these creeks are ephemeral with no permanent pools or waterholes occurring within the application area (MBS Environmental, 2009).

The vegetation within the application area is described broadly as varying from *Triodia* hummock grassland dominated plains, slopes and hills to *Acacia* shrubland over Tussock grass in minor drainage lines (MBS Environmental, 2009). This vegetation type appears typical of the Chichester subregion when compared to the Chichester subregion vegetation description given by CALM (2002).

Two flora and vegetation surveys have been conducted over the application area by Mattiske Consulting in May 2007. One of the flora and vegetation surveys covered Mining Lease 45/429 and identified a total of 138 taxa from 35 families and 76 genera (Mattiske Consulting 2007a). The dominant families were *Poaceae*, *Amaranthaceae*, *Malvaceae* and *Mimosaceae* (Mattiske Consulting, 2007a). The other survey covered Mining Lease 45/430 and identified a total of 123 taxa from 31 families and 66 genera (Mattiske Consulting 2007b). The dominant families were *Poaceae*, *Amaranthaceae*, *Mimosaceae* and *Papilionaceae* (Mattiske Consulting 2007b).

Mattiske Consulting (2007a; 2007b) identified three weed species during the flora and vegetation surveys: Kapok Bush (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*) and Common Purslane (*Portulaca oleracea*). The presence of these introduced weed species lowers the biodiversity value of the proposed clearing area. Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Should a clearing permit be granted, it is recommended that a condition be imposed for the purposes of weed management.

Western Wildlife has conducted two fauna surveys in 2006/2007 and 2008, over numerous tenements within the Woodie Woodie region, including the application area. These surveys identified three broad habitat types that will be affected by the proposed clearing, however MBS Environmental (2009) has concluded that none of the landforms or habitat types are unique at the local or regional scale. Table 1 below shows the number of vertebrate fauna species recorded during the fauna survey in comparison to the number of species with the potential to occur:

Table 1: Vertebrate fauna species with the potential to occur within the Woodie Woodie tenements:

	Amphibians	Reptiles	Birds	Mammals	Total
Potential to Occur	7	78	138	51	274
Recorded During Survey	5	60	92	22	179

(MBS Environmental, 2009)

This table indicates that the application area is potentially high in fauna species diversity, particularly birds and reptiles. The landforms, vegetation types and fauna habitats in the application area are well represented locally and within the Pilbara region generally and therefore, the proposed clearing is unlikely to have a significant impact on biological diversity.

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

Methodology CALM (2002)
Matiske Consulting (2007a)
Matiske Consulting (2007b)
MBS Environmental (2009)
GIS Database
- Interim Biological Regionalisation for Australia

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

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

Western Wildlife was commissioned by MBS Environmental to undertake vertebrate fauna surveys in the Woodie Woodie project area in 2006/2007 and 2008. These surveys were conducted in accordance with the Environmental Protection Authority (EPA) Position Statement No. 3 and Guidance Statement 56: *Guidance for the Assessment for Environmental Factors - Terrestrial Fauna for Environmental Impact Assessment in Western Australia* (EPA 2002; 2004). The 2006/2007 reconnaissance survey consisted of trapping at 12 sites throughout the Woodie Woodie tenements whilst the 2008 fauna survey conducted trapping at ten sites throughout the Woodie Woodie project area (Western Wildlife, 2007; 2008).

These surveys identified three broad habitat types within the application area (MBS Environmental, 2009):

- 1) *Cenchrus ciliaris* dominated plains and minor creeklines with emergent *Acacia*;
- 2) *Triodia* hummock grassland dominated plains; and
- 3) Scrub / *Triodia* hummock grassland on low rocky hills and mesas.

The proposed clearing is likely to result in the following impacts to fauna;

- Mortality of vertebrate and invertebrate species in the clearing footprint area. Sedentary species and young animals are particularly susceptible;
- Displacement of mobile species in the proposed clearing area into surrounding habitats;
- Temporary loss of habitat for foraging and shelter; and
- Localised disturbance from noise and pollution.

Migratory bird species are known to frequently visit the Woodie Woodie tenements, including the Rainbow Bee-eater (*Merops ornatus*), Great Egret (*Ardea alba*) and the Wood Sandpiper (*Tringa glareola*) (MBS Environmental, 2009). The clearing area is quite large and migratory bird species may visit the Woodie Woodie area as it may be important habitat for migratory bird species.

In addition to migratory bird species there are numerous other fauna species of conservation significance that have the potential to occur, with several having been recorded in the Woodie Woodie tenements during the fauna surveys (Western Wildlife, 2007; 2008):

- Australian Bustard (*Ardeotis australis*) – Priority 4 on the Department of Environment and Conservation's (DEC's) Threatened and Priority fauna list;
- Pilbara Orange Leaf-nosed Bat (*Rhinonictis aurantius*) – Schedule 1 (Fauna that is rare or likely to become extinct), *Wildlife Conservation (Specially Protected Fauna) Notice 2008* and Vulnerable, *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*;
- Star Finch (*Neochima ruficauda subclaescens*) – Priority 4 on the DEC's Threatened and Priority fauna list; and
- Western Pebble-mound Mouse (*Pseudomys chapmani*) – Priority 4 on the DEC's Threatened and Priority Fauna list.

The Australian Bustard is a dispersive species with widespread movements over long distances (DECC, 2005). The Australian Bustard is known to inhabit grasslands, low shrublands, grassy woodlands as well as altered environments such as croplands and airfields (DECC, 2005). The species usually breeds on bare ground, on low sandy ridges or stony rises (DECC, 2005). This species is slow to take flight and is therefore vulnerable to being killed by vehicles (Western Wildlife, 2007). This species has been recorded on numerous occasions throughout the Woodie Woodie tenements (Western Wildlife, 2007) and therefore, would be likely to occur within the application area. However, given the widespread distribution of this species it is unlikely that the vegetation within the application area would represent significant habitat for this species.

The Pilbara Orange Leaf-nosed Bat is known to generally roost in abandoned mines in the east Pilbara, however, very few roost sites of this species are known (Western Wildlife, 2008). This species requires warm

and humid roost sites and feeds in adjacent woodlands (Duncan et al., 1999 as cited in Western Wildlife, 2008). Calls of the Orange Leaf-nosed Bat were recorded in the Woodie Woodie area in 2008, however, this species has not been recorded in any of the prospect areas and there are no suitable roost sites present in the prospect areas, including the application area (Western Wildlife, 2008).

The Star Finch has a patchy distribution within the Pilbara, and can be found at low densities where it occurs (Garnett and Crowley, 2000). The Star Finch inhabits the dense vegetation around swamps, rivers and permanent waterholes in the larger watercourses of the north-west of Western Australia (Johnstone and Storr, 2004 as cited in Western Wildlife, 2007). The Star Finch is likely to occur seasonally in small numbers around waterholes in the area, and six individuals have previously been recorded on the Woodie Woodie tenements (Western Wildlife, 2007). Based on the above, it is possible that this species may occur near ephemeral creeklines within the application area following rainfall, however, it is more likely that this species would be found in areas where permanent sources of water occur. Therefore, it is unlikely that the vegetation within the application area represents significant habitat for this species.

The Western Pebble-mound Mouse generally occurs on gentler slopes of rocky ranges where the ground is covered by a stony mulch and vegetated by hard spinifex, often with an overstorey of eucalypts and scattered shrubs (Van Dyck and Strahan, 2008). Mounds are often sited close to narrow ribbons of *Acacia*-dominated scrub that grow along incised drainage lines (Van Dyck and Strahan, 2008). Numerous mounds of this species have been found throughout the Woodie Woodie tenements, on low rocky hills, however all mounds found have been old with no evidence of recently active mounds (Western Wildlife, 2007). Pilbara Manganese should make all contractors aware that Western Pebble-mound Mouse mounds may be present in rocky places within the application area, and that these should be avoided wherever possible.

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

Methodology DECC (2005)
EPA (2002)
EPA (2004)
Garnett and Crowley (2000)
MBS Environmental (2009)
Van Dyck and Strahan (2008)
Western Wildlife (2007)
Western Wildlife (2008)

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

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

Mattiske Consulting has conducted two flora and vegetation surveys in May 2007 that have included the application area. One of the flora surveys covered Mining Lease 45/429 whilst the other flora survey covered Mining Lease 45/430 (Mattiske Consulting 2007a; 2007b). In addition, MBS Environmental (2009) conducted a desktop search of the Department of Environment and Conservation's (DEC's) databases and the Environment Protection and Biodiversity Conservation (EPBC) database to compile a potential Declared Rare Flora (DRF) and Priority flora species list for the proposed clearing area.

According to available databases, there are no known records of DRF within 100 kilometres of the application area (GIS Database). In addition, no DRF has previously been recorded within the Woodie Woodie tenements during previous flora and vegetation surveys (MBS Environmental, 2009).

Following a search of DEC and EPBC databases, MBS Environmental (2009) identified 16 Priority flora species that could potentially occur in the region based on known distributions. In addition, a search by MBS Environmental (2009) of the Western Australian Herbarium specimen database indicates that two Priority flora species may occur within the Woodie Woodie area:

- *Lepidium amelum* (Priority 1); and
- *Dampiera atriplicina* (Priority 2).

These species were not recorded within the application area during the flora and vegetation surveys conducted by Mattiske Consulting (2007a; 2007b).

The flora and vegetation surveys conducted by Mattiske Consulting (2007a; 2007b) identified two Priority flora species within Mining Leases 45/429 and 45/430:

- *Tephrosia* sp. Cathedral Gorge (Priority 3); and
- *Acacia glaucocaesia* (Priority 3).

The Priority flora species *Tephrosia* sp. Cathedral Gorge was recorded at four sites within Mining Lease 45/429, however, this species was not recorded within the application area (MBS Environmental, 2009). The closest population was located approximately 100 metres to the north of the application area (MBS Environmental,

2009). The Priority flora species *Acacia glaucocaesia* was recorded from Mining Lease 45/429, however was not recorded within the application area (MBS Environmental, 2009). This species was located approximately 50 metres from the application area (MBS Environmental, 2009). Based on the distance of these Priority flora populations from the application area, it is unlikely that these species will be impacted by the proposed clearing.

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

Methodology Matiske Consulting (2007a)
Matiske Consulting (2007b)
MBS Environmental (2009)
GIS Database
- Declared Rare and Priority Flora list

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

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

There are no known Threatened Ecological Communities (TECs) within the area applied to clear or within 100 kilometres of the application area (GIS Database).

MBS Environmental (2009) report that no TECs were identified during the flora and vegetation survey of the application area.

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

Methodology MBS Environmental (2009)
GIS Database
- Threatened Ecological Communities

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

Comments Proposal is not at variance to this Principle

The application area falls within the Pilbara IBRA Bioregion (GIS Database). Shepherd et al. (2001) report that approximately 99.9% of the pre-European vegetation still exists in this Bioregion (see table below).

The vegetation within the application area is recorded as (Shepherd et al., 2001):

- **Beard Vegetation Association 173:** Hummock grasslands, shrub steppe, Kanji over soft spinifex and *Triodia wiseana* on basalt; and
- **Beard Vegetation Association 177:** Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* over hard spinifex *Triodia brizoides*.

According to Shepherd et al. (2001) approximately 100% of these vegetation associations remain within the Bioregion (see table below).

Therefore, the vegetation within the application area is not a significant remnant of native vegetation within 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	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
173	1,753,116	1,753,166	~100	Least Concern	7.5
177	169,446	169,446	~100	Least Concern	0.0
Beard veg assoc. – Bioregion					
173	1,752,533	1,752,533	~100	Least Concern	7.5
177	169,446	169,446	~100	Least Concern	0.0

* Shepherd et al. (2001) updated 2005

** 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)
Shepherd et al. (2001)
GIS Database
- Interim Biogeographic Regionalisation for Australia

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

Comments Proposal is at variance to this Principle

The application area contains an ephemeral drainage line (GIS Database). MBS Environmental (2009) has reported two vegetation units within the application area that are generally associated with watercourses:

- 1) Scrub or Thicket of *Carissa lanceolata*, *Petalostylis labicheoides*, *Acacia bivenosa* and *Acacia ancistrocarpa* over *Triodia pungens*, *Triodia basedowii*, *Cenchrus ciliaris* and *Chrysopogon fallax* along minor watercourses.
- 2) Scrub or Low Shrubland of *Acacia ancistrocarpa*, *Acacia arida*, *Acacia acradenia*, *Petalostylis labicheoides*, *Gossypium australe*, *Acacia synchronicia* and *Acacia inaequilatera* over *Triodia longiceps* and *Triodia wiseana* with patches of *Cenchrus ciliaris* on flats, often associated with major watercourses.

These vegetation units are distributed as follows (MBS Environmental, 2009):

Vegetation Unit	Total Area Mapped (hectares)	Total Area within Clearing Permit Application Area (hectares)
Vegetation Unit 1	540.72	8.0
Vegetation Unit 2	1,107.13	40.2

MBS Environmental (2009) report that based on preliminary designs approximately 2.1 hectares of Vegetation Unit 1 will be impacted on by the proposed clearing. Based on the above table, less than 4% of Vegetation Unit 2 occurs within the application area. It is therefore not expected that the proposed clearing will significantly impact on the overall representation of these vegetation units in the local area.

Based on the above, the proposed clearing is at variance to this Principle. However, vegetation associated with watercourses is well represented throughout the Woodie Woodie region. Therefore the proposed clearing associated with watercourses is unlikely to have a significant impact on any watercourse or wetland.

Should a permit be granted, it is recommended that the proponent liaise with the Department of Water to determine whether a Bed and Banks permit is necessary for the proposed works.

Methodology MBS Environmental (2009)
GIS Database
- Hydrography, 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 majority of the application area has been mapped as occurring within the Coonigmah Land System (GIS Database). The Coonigmah Land System consists of plateau surfaces, low hills with steep slopes and undulating uplands supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). This land system is considered to have a very low erosion risk and the vegetation is not susceptible to degradation (Van Vreeswyk et al., 2004).

MBS Environmental (2009) has listed potential sources of land degradation from the proposed clearing:

- Wind erosion from topsoil stripping;
- Wind and water erosion of topsoil stockpiles;
- Wind and water erosion of rehabilitated surfaces e.g. waste rock stockpiles;
- Water erosion due to changes in the surface flow;
- Soil compaction;
- Soil contamination;
- Introduction and/or spread of weeds.

MBS Environmental (2009) report that Pilbara Manganese will implement management strategies in order to

minimise land degradation, which include:

- Minimising the area requiring vegetation removal;
- Confining vehicle movements to defined haul roads and tracks;
- Conducting topsoil-stripping activities during periods of low winds;
- Establishing vegetation on bare surfaces on completion of activities;
- Stockpiling topsoil for use in rehabilitation;
- Implementation of a weed management program;
- Progressive rehabilitation of completed surfaces to minimise active areas exposed;
- Scarifying of compacted tracks prior to rehabilitation of the site.

Based on the above, the proposed clearing is not likely to be at variance to this Principle. It is recommended that should a permit be granted, conditions be imposed for the purposes of weed management and rehabilitation.

Methodology MBS Environmental (2009)
Van Vreeswyk et al. (2004)
GIS Database
- Rangelands System Mapping

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

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

The proposed clearing is not located within close proximity to any conservation areas (GIS Database). The nearest Department of Environment and Conservation (DEC) managed land is the Rudall River National Park located approximately 90 kilometres south-east of the application area (GIS Database).

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

Methodology GIS Databases
- CALM Managed Land and Waters

(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

The application area is located in an arid region with an average annual rainfall of approximately 327 millimetres falling mainly during the summer months (MBS Environmental, 2009). Based on an average annual evaporation rate of approximately 3,800 millimetres, any surface water resulting from rain events is relatively short-lived (MBS Environmental, 2009).

The application area has an ephemeral drainage line running through it (GIS Database). Based on the climate of the region this creek is expected to be dry except following significant rainfall events which are typically associated with tropical cyclones.

The groundwater and surface water within the Woodie Woodie region is well documented with over ten years of monitoring data (MBS Environmental, 2009). The groundwater and surface water within the Woodie Woodie region has pH ranging between 7.2 and 8.5 and is generally fresh to brackish (MBS Environmental, 2009).

The natural water table is more than 20 metres below natural ground level (MBS Environmental, 2009). Therefore, the impact of vegetation removal on groundwater levels is unlikely to be significant. In addition, due to the arid climate, surface water runoff is expected to be minimal except following significant rainfall. Hence, the proposed clearing is unlikely to have any significant impact on surface water flows or groundwater level or quality.

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

Methodology MBS Environmental (2009)
GIS Database
- Hydrography, linear

(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 in an arid region where the average annual evaporation rate greatly exceeds the average annual rainfall (MBS Environmental, 2009). There are no permanent watercourses within the application area however an ephemeral drainage line dissects the proposed clearing area (GIS Database). This drainage line is expected to be dry for most of the year, and would likely only flow briefly immediately following

significant rainfall.

Natural flood events do occur within the Pilbara following cyclonic activity. The proposed clearing is not expected to increase the incidence or intensity of such events given the size of the area to be cleared (50ha) in relation to the Oakover River catchment area (2,001,756ha) (GIS Database).

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

Methodology MBS Environmental (2009)
GIS Database
- Hydrographic Catchments - Catchments

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

Comments

There is one Native Title claim (WC99/008) 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 tenements have been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of that act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

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

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

There were no public submissions received during the public comments period.

Methodology GIS Database
- Aboriginal Sites of Significance
- Native Title Claims

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles, and is at variance to Principle (f), is not likely to be at variance to Principles (a), (b), (c), (d), (g), (h), (i) and (j) and is not at variance to Principle (e).

Should the permit be granted it is recommended that conditions be imposed on the permit for the purposes of weed management, rehabilitation, record keeping and permit reporting.

5. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DECC (2005) Australian Bustard - profile. Department of Environment and Climate Change. Available online from: <http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/profile.aspx?id=10063>. Accessed 26 March, 2009.
- 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.
- EPA (2002) Terrestrial Biological Surveys as an element of biodiversity protection. Position Statement No. 3. March 2002. Environmental Protection Authority.
- EPA (2004) Guidance for the Assessment of Environmental Factors - terrestrial flora and vegetation surveys for Environmental Impact Assessment in Western Australia. Report by the EPA under the Environmental Protection Act 1986. No. 51 WA.
- Garnett, S.T. and Crowley, G.M. (2000) Action Plan for Australian Birds 2000. Environment Australia, Canberra.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske Consulting (2007a) Flora and Vegetation Survey of Tenement M45/429 (Including Sat/Nav & Radio Hill Deposits), Woodie Woodie. Mattiske Consulting Pty Ltd, Western Australia.
- Mattiske Consulting (2007b) Flora and Vegetation Survey of Tenement M45/430 (Including Big Mac, Ghost, Hunter, Sardine, Topvar and Whodowe Prospects), Woodie Woodie. Mattiske Consulting Pty Ltd, Western Australia.
- MBS Environmental (2009) Woodie Woodie Operations Purpose Permit Application Lucy Mack Project: Native Vegetation Management Plan and Assessment of Clearing Principles. Martinick Bosch Sell Pty Ltd, Western Australia.
- Pilbara Manganese (2009) Clearing Permit Application Supporting Documentation. February 2009.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

- Van Dyck, S. and Strahan, R. (eds.) (2008) *The Mammals of Australia*. Third Edition. New Holland Publisher (Australia) Pty Ltd, Australia.
- Van Vreeswyk, A.M.E., Payne, A.L., Hennig, P. and Leighton, K.A. (2004) *An Inventory and Condition Survey of the Pilbara Region*, Western Australia. Department of Agriculture, Western Australia.
- Western Wildlife (2007) *Woodie Woodie Project Area: Baseline Fauna Survey 2006/2007*. Western Wildlife, Western Australia.
- Western Wildlife (2008) *Ten Prospect Areas at Woodie Woodie*. Western Wildlife, Western Australia.

6. Glossary

Acronyms:

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

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.