Government of Western Australia
Department of Mines and Petroleum

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3064/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Pilbara Manganese Pty Ltd**

1.3. Property details

Property: Mining Lease 46/93
Mining Lease 46/162
General Purpose Lease 46/4
Local Government Area: Shire of East Pilbara
Colloquial name: Windy Hill and Lox Projects

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
Vegetation within the application area has been mapped at a 1:250,000 scale as Beard Vegetation Association: 173: Hummock grasslands, shrub steppe; kanji over soft spinifex & *Triodia wiseana* on basalt. Mattiske Consulting undertook a flora and vegetation survey over Mining Lease 46/93 in May 2007 and the north-western portion of Mining Lease 46/162 in October 2008. The remainder of Mining Lease 46/162 and the whole of General Purpose Lease 46/4 was surveyed by Goldfields Landcare Services during December 2008. The following seven vegetation units were identified within the application area (MBS Environmental, 2009): 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; 3. Low Shrubland of *Acacia arid* and *Acacia hilliana* over *Triodia wiseana* and *Dampiera candicans* on slopes and 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. hisidula* on flats and lower slopes; 6. Rehabilitated land; 7. Previously cleared land.	Pilbara Manganese has applied to clear up to 50 hectares of native vegetation within an application area of 157.3 hectares for the purposes of mineral production. The clearing application area is located approximately 160 kilometres south-east of Marble Bar (GIS Database). The proposal includes two projects each including the establishment of an open pit, waste dump, run of mine pad, haul roads and other associated infrastructure (MBS Environmental, 2009). Clearing will be by mechanical means.	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994). to Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).	The vegetation condition rating is based on information reported by Mattiske Consulting (2007) and Goldfields Landcare Services (2009).

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, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002).

Mattiske Consulting (2007) have identified 16 plant communities across the Woodie Woodie tenements, five of which are found in the application area. None of these plant communities are listed as Threatened Ecological Communities or Priority Ecological Communities (MBS Environmental, 2009). The condition of the vegetation is described as very good throughout the area, excluding areas of disturbance from previous mining and exploration activities (MBS Environmental, 2009).

A number of flora and vegetation surveys have been conducted over the Woodie Woodie tenements (MBS Environmental, 2009). A flora and vegetation survey of Mining Lease 45/430 was conducted by Mattiske Consulting in 2007 which identified a total of 107 taxa from 31 families and 76 genera. A flora survey of Mining Lease 46/93 and General Purpose Lease 46/4 was conducted by Goldfields Landcare Services in 2008 that identified a total of 82 taxa from 26 families and 45 genera. None of these were Declared Rare Flora or Priority Flora (MBS Environmental, 2009). The most common families within the application area were the Grass family (Poaceae), Amaranth family (Amaranthaceae) and Acacia family (Mimosaceae) (MBS Environmental, 2009).

Mattiske Consulting (2007) and Goldfields Landcare Services (2009) identified four weed species within the application area. These were Kapok Bush (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*), Purslane (*Portulaca oleracea*) and Mimosa Bush (*Vachellia farnesiana*). These species are likely to have originated from pastoral land use in the region. None of these species are listed as a Declared Plant for the Shire of East Pilbara by the Department of Agriculture and Food. However, Kapok Bush and Buffel Grass species can be invasive and have the capacity to spread rapidly in disturbed areas (Mattiske Consulting, 2007). The presence of these introduced weed species lowers the biodiversity value of the area proposed to be cleared. 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 purpose of weed management.

Western Wildlife has undertaken a Level 2 fauna survey of the Woodie Woodie area in 2006/2007 and 2008 that included trapping sites within the application area (Davis & Wilcox, 2007; Western Wildlife, 2009). They have identified three broad habitat types that will be affected by the clearing. However, MBS Environmental (2009) conclude that none of the landforms or habitat types are unique at the local scale and are well represented throughout the region.

The flora and fauna surveys found a similar representation of species throughout the whole Woodie Woodie area, hence the application area is unlikely to have greater biological diversity than other undisturbed areas nearby.

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

Methodology

CALM (2002)
Davis & Wilcox (2007)
Goldfields Landcare Services (2009)
Mattiske Consulting (2007)
MBS Environmental (2009)
Western Wildlife (2009)
GIS Database
- Interim Biogeographic Regionalisation of 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 Consolidated Minerals Ltd 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 (Davis & Wilcox, 2007; Western Wildlife, 2009).

From this survey the following three broad habitat types were identified within the application area (MBS Environmental, 2009):

- *Cenchrus ciliaris* dominated plains and minor creek lines with emergent *Acacia*;
- *Triodia* hummock grassland dominated plains;
- Scrub/*Triodia* hummock grassland on low rocky hills and mesas.

These habitats are well represented in the Woodie Woodie area and at a regional scale. Areas of similar habitat will be retained as the application area represents less than 3% of the recorded amount for each habitat type over the Woodie Woodie area (MBS Environmental, 2009).

There are several ephemeral creek lines within the application area (GIS Database). These creek lines may provide habitat for larger numbers of fauna during times of flood but for most of the year these areas would not be a significant habitat feature.

The proposed clearing of these habitats has the potential 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 and permanent loss of habitat for foraging and shelter; and
- localised disturbances from noise and dust pollution.

There is the potential for a number of fauna species of conservation significance to occur within the application area. Searches of the Department of Environment and Conservation (DEC) database and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) database for species that may occur in the Woodie Woodie region listed thirteen species (MBS Environmental, 2009). A further three species of conservation significance were recorded in the Woodie Woodie area that were not listed by the database searches (MBS Environmental, 2009).

Six of the species listed; Oriental Plover (*Charadrius veredus*), White-bellied Sea-eagle (*Haliaeetus leucogaster*), Rainbow Bee-eater (*Merops ornatus*), Great Egret (*Ardea alba*), Cattle Egret (*Ardea ibis*) and Wood Sandpiper (*Tringa glareola)* are listed as migratory under the *EPBC Act 1999*. These birds may overfly and be occasional visitors to the application area, rather than using the habitats of the project areas regularly. The proposed clearing is not likely to impact critical feeding or breeding habitat for any migratory bird species.

Based on known distributions and habitat requirements the Bilby (*Macrotis lagotis*), Mulgara (*Dasycercus cristicauda*), Pilbara Olive Python (*Liasis olivaceus barroni*), Great Desert Skink (*Egernia kintorei*) (all listed as Schedule 1 - fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008* and Vulnerable under the *EPBC Act 1999*), Northern Marsupial Mole (*Notoryctes caurinus*) (Schedule 1 - fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008* and Endangered under the *EPBC Act 1999*) and Ghost Bat (*Macroderma gigas*) (DEC Priority 4 listing) are all considered to have a low likelihood of occurrence within the application area and are unlikely to be significantly impacted by the proposed clearing (MBS Environmental, 2009).

The Australian Bustard (*Ardeotis australis*) (DEC Priority 4 listing) and Western Star Finch (DEC Priority 4 listing) have been recorded in the Woodie Woodie area and are likely to occur within the project area (MBS Environmental, 2009). However, habitat for these species is represented widely throughout the Pilbara and the proposed clearing is not likely to significantly impact habitat for these species.

The Western Pebble-mound Mouse (*Pseudomys chapmani*) (DEC Priority 4 listing) is common to very common in the Pilbara where habitats of scree slopes and stony plains are present (Davis & Wilcox, 2007). No Pebble-mound Mouse mounds were recorded in the application area, however suitable habitat of rocky hills has been recorded within the application area (MBS Environmental, 2009). This species has been found in similar habitat within the Woodie Woodie area and the proposed clearing will result in the loss of habitat for this species. Similar habitat for the Western Pebble-mound Mouse is common throughout the Woodie Woodie and Pilbara area and the proposed clearing is not likely to significantly impact this species.

The Pilbara Orange Leaf-nosed Bat (*Rhinonicteris aurantius*) (Schedule 1 - fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2008* and Vulnerable under the *EPBC Act 1999*) has been recorded within the Woodie Woodie area (MBS Environmental, 2009). This species may forage over low hills within the application area, however there are no roosting sites present (Davis & Wilcox, 2007). Given this species would only utilise the application for foraging the proposed clearing is not likely to significantly impact this species.

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

Methodology

Davis & Wilcox (2007)
EPA (2002)
EPA (2004)
MBS Environmental (2009)
Western Wildlife (2009)
GIS Database
- Hydrography, linear

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

Comments

Proposal is not likely to be at variance to this Principle

According to available databases, there are no Declared Rare Flora (DRF) or Priority Flora within the application area (GIS Database). MBS Environmental (2009) conducted a search of the DEC threatened flora, *EPBC Act 1999* and Western Australian Herbarium specimen databases. The searches revealed a total of seventeen Priority Flora species that may occur within the application area based on known distributions. None of these species have been recorded within the application area (MBS Environmental, 2009).

A flora survey was conducted over the area by Mattiske Consulting (2007) and Goldfields Landcare Services (2009). These surveys found no DRF or Priority Flora species within the application area. The nearest site of recorded threatened flora is located approximately 50 metres south-west of the application area (MBS Environmental, 2009). This site contains two Priority Flora species; *Acacia glaucocaesia* (Priority 3) and *Tephrosia sp.* Cathedral Gorge (Priority 3). The proposed clearing is not likely to have a significant impact on these species.

The vegetation communities present within the application area are well represented throughout the region (MBS Environmental, 2009). It is not expected that the proposed clearing will result in the loss of habitat necessary for the continued existence of any DRF or Priority Flora species.

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

Methodology

Goldfields Landcare Services (2009)
Mattiske Consulting (2007)
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

According to available databases, there are no known Threatened Ecological Communities (TEC's) within the application area (GIS Database). There were no vegetation communities described as TEC's recorded during the botanical survey within the application area (MBS Environmental, 2009). The nearest known TEC is located approximately 210 kilometres north of the application area (GIS Database). Given the distance to the nearest TEC the proposed clearing is unlikely to have any impacts on any TEC's.

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

Methodology

MBS Environmetnal (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 Interim Biogeographic Regionalisation for Australia (IBRA) bioregion within which approximately 99.9% of the Pre-European vegetation remains (see table) (GIS Database; Shepherd et al., 2001).

The vegetation of the application area has been mapped as Beard Vegetation Association 173: Hummock grasslands, shrub steppe, Kanji over soft spinifex and *Triodia wiseana* on basalt.

According to Shepherd et al. (2001) approximately 100% of Beard Vegetation Association 173 remains at both a state and bioregional level. Therefore, the area proposed to be cleared does not represent a remnant of native vegetation within an area that has been extensively cleared. The vegetation types are still widely represented within the local area and the application area does not represent an area of localised remnant vegetation (MBS Environmental, 2009).

Whilst a small percentage of the vegetation types within the Pilbara bioregion are protected within conservation reserves, the bioregion remains largely uncleared. As a result, the conservation of vegetation associations within the bioregion is not likely to be impacted by this proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves (and post clearing %)*
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
173	1,753,116	1,753,116	~100	Least Concern	7.5
Beard veg assoc. – Bioregion					
173	1,752,533	1,752,533	~100	Least Concern	7.5

* Shepherd et al. (2001)
** Department of Natural Resources and Environment (2002)

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)

Presumed extinct	Probably no longer present in the bioregion
Endangered	<10% of pre-European extent remains
Vulnerable	10-30% of pre-European extent exists
Depleted	>30% and up to 50% of pre-European extent exists
Least concern	>50% pre-European extent exists and subject to little or no degradation over a majority of this area

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

Methodology Department of Natural Resources and Environment (2002)
MBS Environmental (2009)
Shepherd et al. (2001)
GIS Database
- Interim Biogeographic Regionalisation of Australia
- Pre-European Vegetation

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

Comments

Proposal is at variance to this Principle

According to available databases, the application area contains several ephemeral drainage lines (GIS Database). MBS Environmental (2009) have reported two vegetation units within the application area that are generally associated with watercourses:

1) Scrub or Thicket of *Carissa lanceolota, Petalostylis labiceoides, Acacia bivenosa* and *Acacia ancistrocarpa* over *Triodia pungens, Triodia basedowii, Cenchrus ciliaris* and *Chrysopogon fallax* along minor watercourses; and

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.

Given the application area includes vegetation growing in association with a watercourse, the proposed clearing is at variance to this Principle.

There are 9.47 hectares of vegetation type 1 and 7.28 hectares of vegetation type 2 present within the application area (MBS Environmental, 2009). MBS Environmental (2009) reports that both vegetation units are common outside the application area and are also well represented in the surrounding areas.

MBS Environmental (2009) report that based on preliminary designs, approximately 4 hectares of vegetation community 1 will be impacted by the proposed project. Vegetation community 1 is well represented throughout the Woodie Woodie tenements (MBS Environmental, 2009), and therefore the proposed clearing of 4 hectares of this vegetation community is unlikely to have a significant impact on the overall representation in the local area. The majority of Vegetation Community 2 was not recorded from a watercourse (MBS Environmental, 2009). It is also reported as being common throughout the local area, therefore clearing is also not likely to have a significant impact on its overall representation in the local area (MBS Environmental, 2009).

Should a permit be granted, it is recommended that if any watercourses are to be disturbed the proponent should liaise with the Department of Water to determine whether a Bed and Banks permit is necessary for the proposed work.

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

According to available databases, the majority of the application area has been mapped as occurring within the Connigmah 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) have listed the 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 to the surface flow;
- soil compaction;
- soil contamination.

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 mining activities;
- stockpiling topsoil for use in rehabilitation;
- storing hydrocarbons and refuelling in bunded areas;
- progressive rehabilitation of completed surfaces to minimise the active area exposed at any time;
- minimising travel on roads during wet conditions;
- scarifying of compacted tracks prior to rehabilitation of the site.

Provided these control measures are implemented, the proposed clearing is not likely to cause appreciable land degradation.

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

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

According to available databases, the application area is not located within close proximity to any conservation area or DEC managed lands (GIS Database). The nearest conservation reserve is the Rudall River National Park located approximately 85 kilometres south-east of the application area (GIS Database). Based on the distance between the application area and the nearest conservation area, the proposed clearing is not likely to impact on the environmental values of any conservation areas.

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

Methodology

GIS Database
- CALM Managed Lands 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 December to March (MBS Environmental, 2009). Based on an average annual evaporation rate of approximately 3,800 millimetres (MBS Environmental, 2009), any surface water resulting from rain events is likely to be relatively short lived.

The application area is dissected by several ephemeral drainage lines (GIS Database). Based on the climate of the region, these creeks are expected to be dry except following significant rainfall events which are typically

associated with tropical cyclones.

The groundwater and surface water of 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 a pH ranging between 7.2 and 8.5 and is generally fresh to brackish with approximately 190 to 1,250 milligrams/Litre Total Dissolved Solids (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 not likely to be significant. In addition, due to the arid climate, surface water runoff is expected to be minimal except following significant rainfall. Given this, the proposed clearing in 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 of the Pilbara where the average evaporation rate greatly exceeds the average annual rainfall (MBS Environmental, 2009). There are no permanent watercourses within the application area, however, several ephemeral drainage lines dissect the proposed clearing area (GIS Database). These drainage lines are expected to be dry for most of the year, and would likely only flow briefly following significant rainfall.

The application area is within the Oakover River catchment area which covers 2,001,756 hectares (GIS Database). Natural flood events do occur in the Pilbara following cyclonic activity, and there may be a localised increase in surface runoff in proposed clearing areas following such events. However, the proposed clearing is not expected to increase the incidence and intensity of flooding given the size of the area to be cleared (50 hectares) in relation to the size of the catchment area (2,001,756 hectares).

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

The clearing permit application was advertised by the Department of Mines and Petroleum, inviting submissions from the public. There were no submissions received.

There is one native title claim over the area under application; WC99/008 (GIS Database). This claim has been registered with the National Native Title Tribunal. However, the mining tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act, 1993.*

According to available databases there are no registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponents' 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.

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, retention of vegetative material and topsoil, record keeping and permit reporting.

5. References

Davis, R.A. & Wilcox, J.A (2007) Woodie Woodie Project Area: Baseline Fauna Survey 2006/2007. Unpublished report for MBS Environmental. Western Wildlife, Western Australia.

Department of Conservation and Land Management (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions.

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EPA (2004) Guidance for the Assessment of Environmental Factors - Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia. Guidance Statement No 51. Environmental Protection Authority, Western Australia.

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MBS Environmental (2008) Woodie Woodie Operations Purpose Permit Application, Windy Hill and Lox Projects: Native Vegetation Management Plan and Assessment of Clearing Principles. Unpublished report for Pilbara Manganese Pty Ltd. Martinick Bosch Sell Pty Ltd, Western Australia.

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 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 (2009) Ten Prospect Areas at Woodie Woodie, Fauna Survey October 2008. Unpublished report for MBS Environmental. 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.
DoIR	Department of Industry and Resources, 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.