



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5498/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Pilbara Manganese Pty Ltd

1.3. Property details

Property: General Purpose Lease 45/40
Mining Lease 45/433
Mining Lease 45/601
Mining Lease 45/637
Mining Lease 45/638
Local Government Area: Shire of East Pilbara
Colloquial name: Chutney Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 2 May 2013

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 for the whole of Western Australia and are useful to look at vegetation in a regional context. One Beard vegetation association has been mapped within the application area (GIS Database):</p> <p>173: Hummock grasslands, shrub steppe; kanji over soft spinifex and <i>Triodia wiseana</i> on basalt.</p> <p>A total of 18 flora and vegetation surveys have been conducted across the Woodie Woodie tenements between 1994 and 2010. Flora and vegetation surveys over the tenements of the application area were conducted by botanists from Mattiske Consulting (2007a, 2007b, 2007c) and MBS Environmental (2010a). A total of 17 plant communities have been identified within the Woodie Woodie tenements to date and eight of these occur within the application area (MBS Environmental, 2010b, 2013).</p> <p>1: Woodland of <i>Eucalyptus camaldulensis</i> var. <i>obtusa</i> over <i>Acacia trachycarpa</i>, <i>Acacia inaequilatera</i> and <i>Ficus brachypoda</i> over *<i>Cenchrus ciliaris</i> along major watercourses.</p> <p>3: Scrub 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.</p> <p>4: Tall Shrubland of <i>Acacia arida</i>, <i>Acacia bivenosa</i>, <i>Acacia synchronicia</i> over patches of <i>Triodia basedowii</i> and <i>Triodia pungens</i> with <i>Grevillea wickhamii</i> subsp. <i>hispidula</i> and emergent <i>Corymbia hamersleyana</i> on</p>	<p>Pilbara Manganese Pty Ltd (Pilbara Manganese) has applied to clear up to 196 hectares of native vegetation, within an application area of approximately 470 hectares, for the purpose of mineral production. The clearing is for manganese mining activities including construction or expansion of five pits, four waste dumps, associated infrastructure, haul roads, watercourse diversions, sedimentation ponds, topsoil stockpiles, ROM pads and a noise control bund. The application area is part of the Woodie Woodie operations located approximately 120 kilometres west of Nullagine.</p> <p>Clearing will be by bulldozers. Vegetation and topsoil will be stockpiled for rehabilitation activities.</p>	<p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994);</p> <p>To:</p> <p>Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).</p>	<p>The vegetation condition was assessed by botanists from Mattiske Consulting and MBS Environmental with the results compiled by MBS Environmental (2013). The condition was assessed using a scale based on Trudgen (1988) and has been converted to the corresponding Keighery (1994) condition.</p>

flats and lower slopes.

5: 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.

6: Open Low Shrubland of *Acacia arida* and *Acacia hilliana* over *Triodia wiseana* and *Dampiera candidans* on slopes and hilltops.

7: Hummock Grassland of *Triodia longiceps* with scattered *Acacia bivenosa*, *Acacia synchronicia* and *Acacia ptychophylla* on flats and lower slopes.

8: Hummock Grassland of *Triodia longiceps* and *Triodia wiseana* with occasional *Grevillea wickhamii* subsp. *hispidula* on flats and lower slopes.

13: Thicket of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Senna artemisioides* subsp. *oligophylla* over mixed small shrubs and *Triodia* spp. on rehabilitation areas.

*indicates introduced species

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area occurs within the Chichester subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by plains supporting a shrub steppe of *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on ranges (CALM, 2002).

A total of 18 flora and vegetation surveys have been conducted across Pilbara Manganese's Woodie Woodie tenements between 1994 and 2010 (MBS Environmental, 2013). The Woodie Woodie tenements includes the application area along with surrounding tenements. A total of 335 vascular plant taxa, from 136 genera and 48 families, have been recorded in the Woodie Woodie tenements (MBS Environmental, 2010b). The most prevalent families are Fabaceae, Poaceae, Malvaceae, Amaranthaceae and Chenopodiaceae (MBS Environmental, 2010b).

No Threatened or Priority Flora have been recorded within the application area during the flora and vegetation surveys or have previously been recorded within the application area (MBS Environmental, 2013; GIS Database). Four Priority Flora species have been recorded in surrounding Woodie Woodie tenements: *Aristida jerichoensis* var. *subspinulifera* (P1), *Lepidium amelum* (P1), *Euphorbia clementii* (P2) and *Goodenia* sp. East Pilbara (P3) (MBS Environmental, 2013). The closest population was *Aristida jerichoensis* var. *subspinulifera*, which was recorded approximately 500 metres north of the application area (MBS Environmental, 2013). Given the Priority Flora are not within the application area, the proposed clearing is unlikely to impact the species.

The application area is within the buffer of the Priority Ecological Community (PEC) 'Stony saline clay plains of the Mosquito Land System' (GIS Database). This PEC is described as a saltbush community of the duplex plains, Mosquito Creek (Nullagine), and is known to contain two endemic Acacias, one from stony plains and the other on rocky ground (DEC, 2012). A total of 17 plant communities have been identified within the Woodie Woodie tenements to date and eight of these occur within the application area (MBS Environmental, 2010, 2013). None of the plant communities resemble any Threatened Ecological Communities (TEC) or PECs (MBS Environmental, 2010b). In addition, the application area does not occur on the Mosquito Land System (GIS Database). Therefore the proposed clearing is unlikely to impact any TEC or PEC.

Ten introduced flora species were recorded within the Woodie Woodie tenements. Weed presence was generally low with Kapok Bush (*Aerva javanica*) impacting some areas (MBS Environmental, 2010b). Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Western Wildlife has undertaken two detailed spring and autumn fauna surveys over the Woodie Woodie tenements between October 2006 and April 2009 (MBS Environmental, 2013). Five fauna habitat types were identified within the application area and these are common and widely represented in the region (MBS Environmental, 2013). A total of five amphibian, 60 reptile, 95 bird and 23 mammal species have been observed in the Woodie Woodie area (MBS Environmental, 2013).

The landforms, vegetation and habitats of the application area are common and widely represented in the region (MBS Environmental, 2013). Furthermore, the application area is in close proximity to existing mining areas. The application area is unlikely to have greater biodiversity than other undisturbed areas in the locality.

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

Methodology CALM (2002)
DEC (2012)
MBS Environmental (2010b)
MBS Environmental (2013)
GIS Database:
- IBRA WA (Regions - Subregions)
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

(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 has undertaken two detailed spring and autumn fauna surveys over the Woodie Woodie tenements between October 2006 and April 2009 (MBS Environmental, 2013). These were Level 2 surveys in accordance with *EPA Guidance Statement 56* (2004) and included trapping for reptiles, amphibians and small mammals; spotlighting and head-torching; bat surveys; bird surveys; and recording of opportunistic sightings (MBS Environmental, 2013). Western Wildlife undertook two Level 1 fauna surveys that cover the application area in May 2006 and May 2010 (MBS Environmental, 2013).

A total of nine fauna habitats were identified within the Woodie Woodie project area and five of these are present within the application area:

- Eucalyptus and Melaleuca fringed creeklines;
- Scrub/Triodia hummock grassland on low rocky hills and mesas;
- Triodia hummock grassland dominated plains;
- Tall shrubland of Acacia; and
- Spinifex on lower slopes and flats (MBS Environmental, 2013).

The land systems, vegetation and habitats of the project area are common and widely represented in the region (MBS Environmental, 2013). The application area does not contain any unusual habitats such as caves or permanent pools (MBS Environmental, 2013; GIS Database).

Western Wildlife identified 13 fauna species listed under the *Wildlife Conservation Act 1950* (WC Act) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as potentially occurring within the Woodie Woodie tenements. Of these 13, most have been assessed as having very low likelihood of occurring within the application area due to lack of suitable habitat (MBS Environmental, 2013). Five Schedule 1 or Migratory species have been recorded within the Woodie Woodie tenements:

- Rainbow Bee-eater (*Merops ornatus*) (Migratory under EPBC Act; Schedule 3);
- Wood Sandpiper (*Tringa glareola*) (Migratory under EPBC Act; Schedule 3);
- Common Sandpiper (*Tringa hypoleucos*) (Migratory under EPBC Act; Schedule 3);
- Great Egret (*Ardea alba*); (Migratory under EPBC Act); and
- Pilbara Orange Leaf-nosed Bat (*Rhinonictis aurantius*) (Vulnerable under EPBC Act; Schedule 1) (MBS Environmental, 2013).

The Rainbow Bee-eater is a common migratory species that has been commonly recorded in the Woodie Woodie area by Western Wildlife (Western Wildlife, 2010). This avifauna species is highly mobile and a common species and the development of the application area is unlikely to significantly impact the species (Western Wildlife, 2010). The Wood Sandpiper, Common Sandpiper and Great Egret are all wide ranging migratory species and suitable wetland habitats are not present in the application area (Western Wildlife, 2010; MBS Environmental, 2013). Calls of the Pilbara Orange Leaf-nosed Bat were recorded in the April 2009 fauna survey indicating that the species does forage within the Woodie Woodie tenements (MBS Environmental, 2013). The Pilbara Orange Leaf-nosed Bat requires warm and humid roost sites and few roost sites have been recorded in the Pilbara. The small gorges and caves present in the Woodie Woodie tenements are not suitable as roost sites for this bat species (MBS Environmental, 2013).

Five Department of Environment and Conservation (DEC) Priority Fauna species have a moderate to high likelihood of occurring within the Woodie Woodie tenements (MBS Environmental, 2013):

- Long-tailed Dunnart (*Sminthopsis longicaudata*) (Priority 3);
- Australian Bustard (*Ardeotis australis*) (Priority 4);
- Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4);
- Grey Falcon (*Falco hypoleucos*) (Priority 4);

- Western Star Finch (*Neochmia ruficauda* subsp. *clarescens*) (Priority 4);

The Australian Bustard inhabits a wide range of habitats which the birds can easily move between. Consequently, the proposed clearing is unlikely to significantly impact on the species (MBS Environmental, 2013).

No mounds of the Western Pebble-mound Mouse have been found within the application area. Inactive mounds have been found throughout the Woodie Woodie tenements, indicating that suitable habitat is widely available, however no active mounds have been found (MBS Environmental, 2013).

The Western Star Finch has been observed along creeklines and in emergent vegetation around sediment ponds within the Woodie Woodie tenements (MBS Environmental, 2013). While some vegetation along watercourses will be cleared, there is expected to be minimal impact as this species is very mobile (MBS Environmental, 2013).

The Long-tailed Dunnart and Grey Falcon have not been recorded during the Woodie Woodie fauna surveys and the proposed clearing is unlikely to significantly impact on these species (MBS Environmental, 2013).

No fauna of conservation significance were recorded within the application area during the 2006 fauna assessment (MBS Environment, 2013). The habitats within the application area are common on both a local and regional scale, therefore they are not likely to comprise of significant habitat for fauna indigenous to Western Australia.

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

Methodology MBS Environmental (2013)
Western Wildlife (2010)
GIS Database:
- Geodata, Lakes

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

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

According to available databases there are no known records of Threatened Flora within the application area (GIS Database).

A total of 18 flora and vegetation surveys have been conducted across Pilbara Manganese's Woodie Woodie tenements between 1994 and 2010 (MBS Environmental, 2010b). Flora and vegetation surveys over the tenements of the application area were conducted by botanists from Mattiske Consulting (2007a, 2007b, 2007c) and MBS Environmental (2010a). No Threatened Flora have been recorded within the Woodie Woodie tenements (MBS Environmental, 2010b).

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

Methodology Mattiske Consulting (2007a)
Mattiske Consulting (2007b)
Mattiske Consulting (2007c)
MBS Environmental (2010a)
MBS Environmental (2010b)
GIS Database:
- Threatened and Priority Flora

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

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

A search of available databases revealed there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest recorded TEC is located approximately 220 kilometres south-west of the application area (GIS Database).

No TECs were identified during the flora and vegetation surveys conducted by Mattiske Consulting and MBS Environmental botanists over the application area (MBS Environmental, 2010b).

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

Methodology MBS Environmental (2010b)
GIS Database:
- Threatened Ecological Sites Buffered

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

Comments Proposal is not at variance to this Principle

The clearing application area falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion in which approximately 99.6% of the pre-European vegetation remains (see table) (Government of Western Australia, 2011; GIS Database). This gives it a conservation status of 'Least Concern' according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002).

The vegetation of the clearing application area has been broadly mapped as Beard vegetation association 173 'Hummock grasslands, shrub steppe; kanji over soft spinifex and *Triodia wiseana* on basalt' (Government of Western Australia, 2011; GIS Database). Approximately 99.7% of this Beard vegetation association remains at the state and bioregional level (Government of Western Australia, 2011). This vegetation association would be given a conservation status of 'Least Concern' at both a state and bioregional level (Department of Natural Resources and Environment, 2002).

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

	Pre-European Area (ha)*	Current Extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,427	17,729,352	~99.6	Least Concern	6.3
Beard Veg Assoc. – State					
173	1,753,104	1,748,261	~99.7	Least Concern	7.5
Beard Veg Assoc. – Bioregion					
173	1,752,521	1,747,678	~99.7	Least Concern	7.5

* Government of WA (2011)

** 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 (2011)
GIS Database:
- IBRA WA (Regions - Subregions)
- Pre-European Vegetation

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

Comments Proposal is at variance to this Principle

There are no permanent watercourses or wetlands within the application area (MBS Environmental, 2013; GIS Database). The headwaters of a number of minor ephemeral drainage lines are located within the application area (MBS Environmental, 2013; GIS Database).

Two plant communities associated with drainage lines have been identified within the application area (MBS Environmental, 2013). Plant community 1 has been recorded along major ephemeral watercourses and approximately 14 hectares of the vegetation occurs within the application area (MBS Environmental, 2013). Plant community 3 has been recorded along minor watercourses and is also common in the general area. Approximately 52 hectares of this vegetation has been mapped within the application area (MBS Environmental, 2013). Although plant community 1 has been described as being along 'major watercourses' in the context of the Woodie Woodie project area, all watercourses are minor ephemeral drainage lines in a regional context (MBS Environmental, 2013). Both plant communities and ephemeral drainage lines are common throughout the Woodie Woodie tenements (MBS Environmental, 2013).

One of Pilbara Manganese's management strategies is to avoid clearing vegetation types associated with watercourses as far as practicable (MBS Environmental, 2013).

Based on the above, the proposed clearing is at variance to this Principle. However, creeks and ephemeral watercourses are common and widespread in the Pilbara bioregion. The proposed clearing associated with watercourses is unlikely to have a significant impact on any watercourse or wetland.

Methodology MBS Environmental (2013)

GIS Database:
- Geodata, Lakes
- Hydrography, Linear

(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 intersects the Coongimah and Rocklea Land Systems (GIS Database).

The Coongimah Land System is characterised by plateau surfaces, low hills with steep slopes and undulating uplands supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). This land system is generally not prone to degradation and has a very low erosion risk (Van Vreeswyk et al., 2004).

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

The soils of the application area are skeletal and derived mainly from the parent materials of chert and dolomite (MBS Environmental, 2013). There is also a thin discontinuous cover of laterite, colluvium and alluvium, especially along drainage lines and in the depressions of valleys and plains (MBS Environmental, 2013). Red/brown loams with a gibber surface are common on the undulating plains and low hills. The soils of the drainage lines are predominantly silty and derived from chert. Soils of the plains mainly overlie calcrete and have an extensive layer of ironstone and quartz on their surfaces, forming a givver surface that is typical in many of the arid zones of Australia (MBS Environmental, 2013).

Although the land systems are stable, the amount of proposed clearing is large (196 hectares). Rehabilitation including revegetation of cleared areas will be carried out following completion of mining, minimising the long term impact of land degradation (MBS Environmental, 2013). However, in the short term there is a risk of wind and water erosion if any susceptible areas are left cleared and bare for long periods of time. Potential impacts from erosion may be minimised by the implementation of a staged clearing condition.

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

Methodology MBS Environmental (2013)
Van Vreeswyk et al. (2004)
GIS Database:
- Rangeland Land System Mapping

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

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

The proposed clearing is not located within a conservation reserve (GIS Database). The nearest conservation area is the ex-Meentheena pastoral lease, a former leasehold proposed for conservation, which is located approximately 47 kilometres north-west 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 Database:
- DEC Tenure

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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

There are no permanent watercourses or wetlands within the application area, however, the application area does include multiple minor non-perennial watercourses (GIS Database). Although plant community 1 has been described as being along 'major watercourses' in the context of the Woodie Woodie project area, all watercourses are minor ephemeral drainage lines in a regional context (MBS Environmental, 2013). Creeks and ephemeral watercourses, as occur throughout the application area, are common and widespread in the Woodie Woodie tenements and are not restricted to the site (MBS Environmental, 2013).

The groundwater and surface water of the Woodie Woodie region is well documented with 15 years of monitoring data from bores, discharge water and upstream and downstream surface water flow in creeks and rivers (MBS Environmental, 2013). The pH ranges between 7.2 and 8.6 and the water is generally fresh to brackish with approximately 350 - 850 milligrams/L total dissolved solids (TDS). The quality of groundwater is indicative of the basin receiving rapid recharge from infiltrating rainwater (MBS Environmental, 2013).

The depth of the water table is greater than 30 metres, therefore, the impact of vegetation removal on the groundwater levels will not be significant (MBS Environmental, 2013). The low density of vegetation and arid climate act to minimise the effect of vegetation removal on surface water runoff (MBS Environmental, 2013).

Monitoring of water quality downstream of previous clearing on the Woodie Woodie mine site has not identified any long-term effects and it is anticipated the current proposed clearing will have similar impacts as those observed for previous projects (MBS Environmental, 2013).

The application area is not within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is Nullagine Water Reserve which is located approximately 110 kilometres west of the application area (GIS Database).

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

Methodology MBS Environmental (2013)
GIS Database:
- 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 areas are located in an arid region where the average annual evaporation rate greatly exceeds the average annual rainfall (MBS Environmental, 2013; GIS Database). There are no permanent watercourses within the application areas, however, numerous ephemeral drainage lines dissect the proposed clearing areas (GIS Database). These drainage lines are expected to be dry for most of the year, and would likely only flow briefly immediately following significant rainfall.

Natural flood events do occur in the Pilbara region following cyclonic activity. However, the proposed clearing is not expected to increase the incidence or intensity of such events given the size of the area to be cleared (196 hectares) in relation to the Oakover River catchment area (2,001,756 hectares) (GIS Database).

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

Methodology MBS Environmental (2013)
GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments - Catchments
- Hydrography, Linear
- Rainfall, Mean Annual

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

Comments

There is one Native Title Claim (WC99/8) over the area under application (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

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

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

The clearing permit application was advertised on 11 March 2013 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received raising concerns about the cumulative impacts of clearing. This is addressed in Principle (e).

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

4. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management, Western Australia.
DEC (2012) Priority Ecological Communities for Western Australia Version 17. Species and Communities Branch, Department of Environment and Conservation, April 2012.

- 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.
- Government of Western Australia (2011) 2011 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, Perth.
- 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 M45/430 (including Big Mac, Ghost, Hunter, Sardine, Topvar and Whodowe Prospects), Woodie Woodie. Unpublished Report Prepared by Mattiske Consulting Pty Ltd for Consolidated Minerals Limited, October 2007.
- Mattiske Consulting (2007b) Flora and Vegetation Survey of the Eat Tenement, Woodie Woodie. Unpublished Report Prepared by Mattiske Consulting Pty Ltd for Consolidated Minerals Limited, October 2007.
- Mattiske Consulting (2007c) Flora and Vegetation Survey of Tenement M45/638 (including Camp East, Paystar and Vespa Prospects), Woodie Woodie. Unpublished Report Prepared by Mattiske Consulting Pty Ltd for Consolidated Minerals Limited, October 2007.
- MBS Environmental (2010a) Flora and Vegetation Survey of Comet/Minnow, Hunter, Austin South, Dories, Brumby, Malta, Elle, Elegant, Old Camp, Plug and Canyon Prospects, Woodie Woodie. Prepared by Martinick Bosch Sell Pty Ltd for Consolidated Minerals, July 2010.
- MBS Environmental (2010b) Site Wide Flora and Vegetation Report Woodie Woodie Manganese Operations. Prepared by Martinick Bosch Sell Pty Ltd for Pilbara Manganese Pty Ltd, September 2010.
- MBS Environmental (2013) Woodie Woodie Operations Clearing Permit (Purpose Permit) Application, Chutney Project Area: Native Vegetation Management Plan and Assessment of Clearing Principles. Prepared by Martinick Bosch Sell Pty Ltd for Pilbara Manganese Pty Ltd, Consolidated Minerals, February 2013.
- Van Vreeswyk A.M.E., Payne A.L., Leighton K.A. and Hennig P. (2004) Technical Bulletin - An Inventory and Condition Survey of the Pilbara Region, Western Australia, No. 92. Department of Agriculture, Perth, Western Australia.
- Western Wildlife (2010) Woodie Woodie Prospect Areas: Homestead, Parrot, Lucy Mack North, Canyon and Sardine. Level 1 Fauna Survey May 2010. Prepared by Western Wildlife for MBS Environmental, June 2010.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
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 Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	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.