



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3506/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Iron Ore (Hamersley Range) Agreement Act 1963, Mineral Lease 4SA (AML 70/4)
Local Government Area: Shire of Ashburton
Colloquial name: Silvergrass Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
9.6		Mechanical Removal	Mineral Exploration, hydrogeological investigations and fencing

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped at a 1:250,000 scale for the whole of Western Australia. Two Beard vegetation associations have been mapped within the application area (GIS Database; Shepherd, 2007).

18: Low woodland; mulga (*Acacia aneura*); and

175: Short bunch grassland - savannah/grass plain (Pilbara) (GIS Database; Shepherd, 2007).

The application area was surveyed by Pilbara Flora staff between 24 and 25 July 2008 (Pilbara Flora, 2009). The following vegetation types were identified within the application area.

1. **Alluvial Plains Shrubland:** Shrubland of *Acacia aneura* var. *aneura*, *Acacia citrinoviridis* and *Acacia bivenosa* over *Senna artemisioides* subsp. *oligophylla* and *Scaevola spinescens* over *Triodia epactia*, *Enneapogon polyphyllus* and *Aristida contorta*;
2. **Self-mulching Clay Grassland:** Grassland of *Polymeria* sp. Hamersley (M.E. Trudgen 11353), *Aristida latifolia* and *Dichanthium fecundum*;
3. **Self-mulching Clay Themeda Grassland:** Tussock grassland of *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) and *Aristida latifolia* with occasional dense patches of *Polymeria* sp. Hamersley (M.E. Trudgen 11353) or *Eriachne benthamii*;
4. **Drainage Line High Open Shrubland:** High open shrubland of *Vachellia farnesiana* over *Dichanthium fecundum*, *Eriachne benthamii* and *Pimelea holroydii*;
5. **Drainage Line Low Woodland:** Low woodland of *Acacia aneura* var. *pilbarana* and *Corymbia hamersleyana* over *Hakea lorea* subsp. *lorea* over *Dichanthium fecundum*; and
6. **Drainage Areas Open Shrubland:** Open shrubland of *Vachellia farnesiana* over *Senna sericea* over *Polymeria* sp. Hamersley (M.E. Trudgen 11353) over *Astrebla lappacea* and *Chrysopogon fallax* (Pilbara Flora, 2009).

Clearing Description Hamersley Iron Pty Ltd is proposing to clear up to 9.6 hectares of native vegetation within an area of approximately 90 hectares (Hamersley Iron Pty Ltd, 2009).

The proposed clearing is for the purpose of undertaking a drilling program to define the eastern extent of the Silvergrass West deposit and to establish a hydrogeological monitoring bore (Hamersley Iron Pty Ltd, 2009).

The proposed program will comprise the following;

- Drill lines and access tracks approximately 9 kilometres x 4 metres;
- 118 drill pads and 236 sumps approximately 25 metres x 15 metres;
- 118 drill holes; and
- Fencing for cattle exclusion plots approximately 5 kilometres x 3 kilometres (Hamersley Iron Pty Ltd, 2009).

Vegetation Condition 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).

Comment The application is located in the Pilbara region, approximately 72 kilometres north-west of Tom Price (GIS Database). The application area is located within the *Themeda* Grasslands Threatened Ecological Community (TEC) (GIS Database). The vegetation condition was derived from a vegetation survey conducted by Pilbara Flora (2009).

The grant of Clearing Permit 3506/1 was advertised by Department of Mines and Petroleum (DMP) on 28 June 2010 and was subject to a 28 day appeals period which closed midnight 22 July 2010. One appeal was received in relation to the conditions placed on this Clearing Permit.

The Department of Mines and Petroleum received advice from the Minister for Environment dated 15 October 2010. The Minister for Environment upheld the appeal, advising the removal of the offset condition and the addition of a condition focused on achieving the following outcomes;

1. Rehabilitation of the disturbed areas of Themeda Grasslands TEC to achieve comparable species composition and cover with adjacent undisturbed areas; and
2. Research and monitoring to inform best practice environmental management for the Themeda Grasslands TEC.

The incorporation of this condition has necessitated an amendment to Clearing Permit CPS 3506/1.

There will not be any additional environmental impacts from those described during the assessment of Clearing Permit CPS 3506/1.

3. Assessment of application against clearing principles

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

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

The application area occurs within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by Mulga low woodland over bunch grasses on fine textured soils in valley floors, and *Eucalyptus leucophloia* over *Triodia brizoides* on skeletal soils on the ranges (CALM, 2002).

The application area occurs within an Environmentally Sensitive Area (ESA) (Threatened Ecological Community (TEC)), which is the *Themeda* Grasslands (GIS Database). The *Themeda* Grasslands TEC is described as 'Themeda grasslands on cracking clays (Hamersley Station, Pilbara), grassland plains dominated by the perennial *Themeda* (kangaroo grass) and many annual herbs and grasses' (DEC, 2008). The *Themeda* Grasslands TEC is listed as 'Vulnerable A' (CALM, 2002).

Four species of Priority Flora (P3 - *Astrelba lappacea*, P3 - *Polymeria* sp. Hamersley, P3 - *Rostellularia adscendens* var. *latifolia* and P3 - *Themeda* sp. Hamersley Station) were recorded within the application area during the vegetation survey (Pilbara Flora, 2009). These species were recorded from 7, 12, 1 and 14 locations respectively (Pilbara Flora, 2009). The impact to individuals of these species is unlikely to significantly and adversely impact on the survival of the population.

One broad habitat type was recorded within the application area. This was;

- Open tussock grasslands on alluvial plains (Pilbara Flora, 2009).

While the open tussock grasslands can be considered as a unique habitat type, there are expansive areas of these grasslands throughout the remainder of the *Themeda* Grasslands TEC and within the Hamersley Station locality (Pilbara Flora, 2009). The proposed clearing is unlikely to have a significant impact on the biological diversity of the region, or comprise of a high level of biological diversity (Pilbara Flora, 2009).

Two alien weed species were recorded within the vegetation survey area (Pilbara Flora, 2009). These were Spiked Malvastrum (*Malvastrum americanum*) and Mimosa Bush (*Vachellia farnesiana*) (Pilbara Flora, 2009). Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. This in turn can lead to greater rates of infestation and further loss of biodiversity if the area is subject to repeated fires. Neither of these species are listed as 'Declared Plant' species under the *Agriculture and Related Resources Protection Act 1976* by the Department of Agriculture and Food (DAFWA). Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

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

Methodology CALM (2002)
DEC (2008)
Pilbara Flora (2009)
GIS Database
- Clearing Regulations - Environmentally Sensitive Areas
- IBRA WA (Regions - subregions)
- Threatened Ecological Communities
- 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**
One broad habitat type was recorded within the application area. This was;

- Open tussock grasslands on alluvial plains (Pilbara Flora, 2009).

While the open tussock grasslands can be considered as a unique habitat type, there are expansive areas of these grasslands throughout the remainder of the *Themeda* Grasslands TEC and within the Hamersley Station locality (Pilbara Flora, 2009).

The fauna habitats identified within the application area are not considered as necessary for the on-going maintenance of any significant fauna habitat. It is likely that equal or higher quality vegetation and fauna habitats would exist throughout the surrounding area.

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

Methodology Pilbara Flora (2009)

(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 GIS databases there are no known records of Declared Rare Flora (DRF) or Priority Flora within the application area (GIS Database). The nearest record of priority flora is a population of *Glycine falcata* (P3) located approximately 1 kilometre north of the application area (GIS Database).

A flora survey was conducted over the application area by staff from Pilbara Flora between 24 and 25 July 2008 (Pilbara Flora, 2009). The survey was conducted via foot traverses of the entire application area (Pilbara Flora, 2009). Vegetation communities were differentiated visually and were mapped by establishing relevés in each vegetation community, with relevés generally conducted using 30 metre radius from a GPS point (Pilbara Flora, 2009).

There were some limitations of the survey (Pilbara Flora, 2009). Although the vegetation survey was undertaken mid-year, the 12 month period leading up to the vegetation survey was slightly higher than average in total rainfall (414 millimetres) with a late onset to the summer rainfall season (Pilbara Flora, 2009). Therefore, the extensive rainfall occurring between January and June 2008 combined with the commencement of spring flowering annuals provided suitable conditions for vegetation surveys to be conducted in 2008 (Pilbara Flora, 2009).

No DRF species were recorded during the survey however; four Priority Flora species were identified (Pilbara Flora, 2009), namely the Priority 3 species: *Astrebla lappacea*, *Polymeria* sp. Hamersley, *Rostellularia adscendens* var. *latifolia* and *Themeda* sp. Hamersley Station (Pilbara Flora, 2009).

The impacts to the above Priority Flora are unlikely to significantly or adversely impact on the survival of the populations.

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

Methodology Pilbara Flora (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 at variance to this Principle

The application area occurs within an Environmentally Sensitive Area (ESA) (TEC), which is the *Themeda* Grasslands (GIS Database).

The *Themeda* Grasslands TEC is described as '*Themeda* grasslands on cracking clays (Hamersley Station, Pilbara), grassland plains dominated by the perennial *Themeda* (kangaroo grass) and many annual herbs and grasses' (DEC, 2008). The *Themeda* Grasslands TEC is listed as 'Vulnerable A' (CALM, 2002).

An ecological community will be listed as vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future (DEC, 2007a). This will be determined on the basis of the best available information by it meeting any one or more of the following criteria:

- (a) The ecological community exists largely as modified occurrences that are likely to be capable of being substantially restored or rehabilitated;
- (b) The ecological community may already be modified and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations; or
- (c) The ecological community may be still widespread but is believed likely to move into a category of higher threat in the medium to long term future because of existing or impending threatening processes (DEC, 2007a).

The TEC is associated with and based on the Brockman land system on Hamersley Station, as mapped by Van Vreeswyk et al (2004) (DEC, 2007b; Pilbara Flora, 2009). The threats facing the TEC include but are not limited to; grazing pressure from both native and introduced fauna, introduction and spread of weeds, changed fire regimes and changes in hydrology (DEC, 2007b).

Given the above threats, the Department of Environment and Conservation (DEC) identified several years ago that the lands comprising and surrounding the *Themeda* Grasslands TEC should be protected in the formal conservation reserve system (DEC, 2007b). In 2003, the Government endorsed the exclusion of a portion of Hamersley Station that contains the TEC from the pastoral lease through the 2015 pastoral lease exclusion process, for future protection as a conservation reserve (DEC, 2007b). According to available GIS Databases, the application area does not form part of the 2015 pastoral lease exclusion boundary (GIS Database).

In 2006 vegetation surveys were conducted over the *Themeda* Grassland TEC by Keith Lindbeck and Associates (Keith Lindbeck and Associates, 2008). During these surveys six distinct grassland types were identified with *Themeda* sp. Hamersley Station being the dominant species in two grassland types and scarce to absent in others (Pilbara Flora, 2009). *Themeda* sp. Hamersley Station was found to be specific to self-mulching clays with significant crab-hole development; hence some areas within the *Themeda* Grassland TEC do not actually support *Themeda* grasslands (Pilbara Flora, 2009).

Pilbara Flora conducted a flora survey over the application area between 24 and 25 July 2008 (Pilbara Flora, 2009). The survey was conducted via foot traverses of the entire application area (Pilbara Flora, 2009). Vegetation communities were differentiated visually and were mapped by establishing relevés in each vegetation community, with relevés generally conducted using 30 metre radius from a GPS point (Pilbara Flora, 2009).

Six vegetation types were mapped during the vegetation survey with three of these containing *Themeda* sp. Hamersley Station namely;

- Vegetation Type 1 - Alluvial Plains Shrubland;
- Vegetation Type 3 - Self-mulching Clay *Themeda* Grassland; and
- Vegetation Type 6 - Drainage Areas Open Shrubland (Pilbara Flora, 2009)

Pilbara Flora (2009) identified vegetation type 3 'Self-mulching Clay *Themeda* Grassland' as most probably representing the *Themeda* Grassland TEC. This vegetation type occurred over 19.79 hectares or 18.25% of the vegetation survey area (Pilbara Flora, 2009). The current mapped boundary of the *Themeda* Grassland TEC covers approximately 17,750 hectares; therefore the clearing of 9.6 hectares of representative vegetation would result in the loss of approximately 0.054% of the TEC.

The risks to the TEC as a result of exploration activities include, but are not limited to, the following:

- Direct removal of species from the TEC therefore affecting the composition, extent and integrity of the TEC;
- Direct removal and fragmentation of fauna habitat;
- Introduction and spread of introduced weeds in the TEC;
- Alteration to surface water flows within and adjacent to the TEC;
- Soil erosion within and adjacent to the TEC; and

- Impacts of dust on the TEC (DEC, 2007b).

The above potential impacts to the TEC as a result of the proposed clearing may be minimised by the implementation of a weed control condition, rehabilitation and revegetation condition and research and monitoring condition.

In the context of this clearing proposal, the *Themeda* Grasslands is a critical asset as it is classified as a TEC. Critical assets are defined as 'the most important environmental assets in Western Australia that must be fully protected and conserved for the state to meet its statutory requirements and to remain sustainable in the longer term' (EPA, 2006).

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

Methodology CALM (2002)
 DEC (2007a)
 DEC (2007b)
 DEC (2008)
 EPA (2006)
 Keith Lindbeck and Associates (2008)
 Pilbara Flora (2009)
 Van Vreeswyk et al (2004)
 GIS Database
 - Clearing Regulations - Environmentally Sensitive Areas
 - DEC Proposed 2015 Pastoral Lease Exclusions
 - Threatened Ecological Communities
 - Threatened Ecological Sites Buffered

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

Comments Proposal is not at variance to this Principle

The application area falls within the Pilbara IBRA bioregion (GIS Database). Shepherd (2007) reports that approximately 99.95% of the pre-European vegetation remains in this bioregion.

The vegetation in the application area is recorded as Beard vegetation associations

18: Low woodland; mulga (*Acacia aneura*); and

175: Short bunched grassland - savannah/grass plain (GIS Database; Shepherd, 2007).

According to Shepherd (2007) approximately 100% of these Beard vegetation associations remain within the Pilbara bioregion (see table below).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Pilbara	17,804,188	17,794,650	~99.95%	Least Concern	~6.32%
Beard vegetation associations - State					
18	19,892,305	19,890,195	~100%	Least Concern	~2.1%
175	526,206	524,861	~99.7%	Least Concern	~4.2%
Beard vegetation associations - Bioregion					
18	676,557	676,557	~100%	Least Concern	~16.8%
175	507,036	507,006	~100%	Least Concern	~4.4%

* Shepherd (2007)

** 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 (2007)

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 not likely to be at variance to this Principle

According to available GIS Databases, there are no permanent watercourses within the application area; however, there are three minor, non-perennial watercourses within the application area (GIS Database).

Based on vegetation mapping conducted by Pilbara Flora (2009) there would appear to be riparian vegetation present within the application area (Pilbara Flora, 2009). Three of the six vegetation associations found within the application area are associated with drainage areas (Pilbara Flora, 2009):

- Drainage Line High Open Shrubland;
- Drainage Line Low Woodland; and
- Drainage Areas Open Shrubland.

The drainage areas were found to typically contain *Vachellia farnesiana*, *Dichanthium fecundum*, *Eriachne benthamii*, *Acacia aneura* var. *pilbarana*, *Corymbia hamersleyana*, *Hakea lorea* subsp. *lorea* and *Senna sericea* (Western Australian Herbarium, 2010; Pilbara Flora, 2009). These vegetation communities are not unique and are considered to be widespread and common within the Pilbara bioregion within similar watercourses.

Approximately 10 of the 118 proposed drill pads will be located within the drainage area vegetation communities. This corresponds to approximately 0.375 hectares of vegetation associated with drainage areas being proposed to be cleared. The proposed clearing of 0.375 hectares for the purpose of exploration drilling is not likely to significantly impact on the conservation of vegetation growing in association with these watercourses.

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

Methodology Pilbara Flora (2009)
Western Australian Herbarium (2010)
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 may be at variance to this Principle

The application area has been surveyed by the Department of Agriculture and Food (Van Vreeswyk et al., 2004). The application area is composed of the following land system (GIS Database);

- Brockman Land System

The Brockman Land System is described as alluvial plains with cracking clay soils supporting tussock grasslands (Van Vreeswyk et al, 2004). An analysis of aerial photography for the application area reveals the application area is most likely to fall within the 'hardpan plains' and 'gilgai plains' land units. This land system can be susceptible to soil erosion if vegetative cover is severely depleted. The vegetation described by Van Vreeswyk et al. (2004) accurately reflects the vegetation types described in vegetation surveys conducted over the area (Pilbara Flora, 2009).

Based on the above, the proposed clearing may be at variance to this Principle. The proponent proposes to clear 9.6 hectares, spread over a total area of approximately 90 hectares. The proposed clearing will be for 118 drill pads, each approximately 15 m x 25 m, and approximately 9 km of access tracks approximately 4 m wide. The nature of the proposed clearing is unlikely to result in appreciable land degradation on a broader scale although localised erosion may occur. Potential land degradation impacts as a result of the proposed clearing may be minimised by the implementation of a rehabilitation condition.

Methodology Hamersley Iron Pty Ltd (2009)
Pilbara Flora (2009)
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 known conservation reserve is the A-class Millstream-Chichester National Park, located approximately 75 kilometres north (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

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The groundwater salinity within the application area is approximately 500 - 1,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. Given the size of the area to be cleared (9.6 hectares) compared to the size of the Hamersley Groundwater Province (10,166,833 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

The application area is located within a *Rights in Water and Irrigation Act 1914* (RIWI Act) Groundwater Management Area (DoW, 2009; GIS Database). The proponent is required to obtain permits to abstract groundwater in this area.

The application area is located within a semi-desert tropical environment (CALM, 2002). Low annual rainfall (approximately 312.5 millimetres) and high evaporation rates (3,600 millimetres/year) would suggest that this area is not prone to flooding under normal rainfall conditions (Pilbara Flora, 2009; BoM, 2010). The application area is devoid of major rivers and watercourses, with surface runoff draining towards Caves Creek approximately 600 metres to the north (Pilbara Flora, 2009). The small size of the proposed clearing area within the above climate is unlikely to result in significant changes to surface water flows.

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

Methodology BoM (2010)
CALM (2002)
DoW (2009)
Pilbara Flora (2009)
GIS Database
- Groundwater Provinces
- Groundwater Salinity, Statewide
- Public Drinking Water Source Area
- RIWI Act, Groundwater Areas

(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 experiences a semi-desert tropical climate with an average annual rainfall of 312.5 millimetres recorded from the nearest weather station at Paraburdoo airport approximately 110 kilometres south-east of the application area (CALM, 2002; BoM, 2010; Pilbara Flora, 2009).

Annual rainfall is variable in the Pilbara, with monsoonal lows producing large regional rainfall events in the summer months to isolated thunderstorms in the dry season (Pilbara Flora, 2009). Large rainfall events are usually associated with cyclones, which can result in flash flooding and overland sheet flow, however the small size of the application area (9.6 hectares) is unlikely to significantly alter the intensity of flooding within the application area and surrounding areas.

The application area is located within the Ashburton River catchment area (GIS Database). However, the small area to be cleared (9.6 hectares) in relation to the size of the Ashburton River catchment area (7,877,743 hectares) (GIS Database) is not likely to increase the potential for flooding within the application area, local area or within the catchment (GIS Database). Furthermore, due to the cracking clay or gilgai soil surface, runoff is likely to get trapped in the large surface voids and is thus likely to be attenuated by the soil structure (Pilbara Flora, 2009).

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

Methodology BoM (2010)
CALM (2002)
Pilbara Flora (2009)
GIS Database
- Hydrographic Catchments - Catchments

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

Comments

The grant of Clearing Permit 3506/1 was advertised by Department of Mines and Petroleum (DMP) on 28 June 2010 and was subject to a 28 day appeals period which closed midnight 22 July 2010. One appeal was received in relation to the conditions placed on this Clearing Permit.

The Department of Mines and Petroleum received advice from the Minister for Environment dated 15 October 2010. The Minister for Environment upheld the appeal, advising the removal of the offset condition and the addition of a condition focused on achieving the following outcomes;

1. Rehabilitation of the disturbed areas of Themeda Grasslands TEC to achieve comparable species composition and cover with adjacent undisturbed areas; and
2. Research and monitoring to inform best practice environmental management for the Themeda Grasslands TEC.

The incorporation of this condition has necessitated an amendment to Clearing Permit CPS 3506/1.

There will not be any additional environmental impacts from those described during the assessment of Clearing Permit CPS 3506/1.

There is one native title claim (WC97/089) over the area under application. 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 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 is one registered Aboriginal sites of significance within the application area (ID_20295) (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.

The application area is located within a *Rights in Water and Irrigation Act 1914* (RIWI Act) Groundwater Area (DoW, 2009; GIS Database). The proponent is required to obtain permits to abstract groundwater in this area.

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 original clearing permit application CPS 3506/1 was advertised by Department of Mines and Petroleum on 28 December 2009, inviting submissions from the public. One public submission was received in relation to the proposed clearing stating no objection to the proposal.

Methodology DoW (2009)
GIS Database
- Aboriginal Sites of Significance
- Native Title Claims
- RIWI Act, Groundwater Areas

4. References

- BoM (2010) Bureau of Meteorology Website - Climate Averages by Number, Averages for PARABURDOO AERO. http://www.bom.gov.au/climate/averages/tables/cw_007185.shtml (Accessed 22 January 2010).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3 - Hamersley subregion) Department of Conservation and Land Management, Western Australia.
- DEC (2007a) Definitions, Categories and Criteria for Threatened and Priority Ecological Communities. www.dec.wa.gov.au (Accessed 5 February 2010).
- DEC (2007b) Advice to Department of Mines and Petroleum Regarding Program of Works Affecting *Themeda* Grasslands on Hamersley Station Threatened Ecological Community. Received 11 December 2007. Department of Environment and Conservation, Western Australia.
- DEC (2008) List of Threatened Ecological Communities on the Department of Environment and Conservation's Threatened Ecological Community (TEC) Database endorsed by the Minister for the Environment. www.dec.wa.gov.au (Accessed 5 February 2010).
- 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.

- DoW (2009) Water Quality Advice. Advice to assessing officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum (DMP). Department of Water, Western Australia.
- EPA (2006) Environmental Offsets. Position Statement No. 9. January 2006. Environmental Protection Authority.
- Hamersley Iron Pty Ltd (2009) Application for a Clearing Permit (purpose Permit) Mineral Exploration and Hydrogeological Investigations - Tenement ML4SA.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Keith Lindbeck and Associates (2008) Vegetation Survey for Clearing Permit Application, Proposed Exploration Gridlines Kangeenarina Well Area, E47/731. Unpublished report prepared by Keith Lindbeck and Associates for Pilbara Iron, April 2007.
- Pilbara Flora (2009) Flora and Vegetation Survey for Exploration Drilling Areas at Silvergrass and Supporting Documentation for a Native Vegetation Clearing Permit Application. Prepared for Rio Tinto Iron Ore. Unpublished Reported dated November 2008 (Revised December 2009).
- Shepherd, D.P. (2007) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- 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 Australian Herbarium (1998-2010) - FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/> (Accessed 19 March 2010).

5. 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.
DMP	Department of Mines and Petroleum, 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.

