



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3982/1
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: Brockman 2

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
45.3		Mechanical Removal	Mineral Production and Associated Activities

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
Beard Vegetation Associations have been mapped at a 250,000 scale for the whole of Western Australia. Two Beard Vegetation Associations' have been mapped within the application area (Shepherd 2007; GIS Database):	Hamersley Iron Pty Ltd has applied to clear up to 45.3 hectares of native vegetation within a total application area of approximately 45.5 hectares. The proposal is situated at the Brockman 2 project area, located approximately 52 kilometres north-west of Tom Price (GIS Database). Clearing will be required for waste dump extensions, waste dump rehabilitation, and low grade ore stockpiles.	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994). to Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).	The vegetation descriptions were derived from descriptions by Hamersley Iron Pty Ltd (2010). The vegetation condition was described using a scale based on Trudgen (1988) and has been converted to the corresponding condition from the Keighery (1994) scale.
82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> .			
175: Short bunch grassland - savannah / grass plain (Pilbara). <i>Astrebla</i> mixed open tussock grassland.			
A flora and vegetation survey of the proposed 'Brockman 2' application area was undertaken by Rio Tinto between 13 April and 18 April 2010 (Rio Tinto, 2010).	Clearing will be done using a dozer, blade down, vegetation will be stockpiled and later used for rehabilitation.		
A total of 11 vegetation communities have been identified within the application area (Rio Tinto, 2010). These are:			
1. Low Open woodland of Eucalypts, over mixed open shrubland / open hummock grassland on the rocky midslopes / Lower slopes of the Hamersley range;			
2. Mixed Acacia shrubland / hummock grassland with emergent <i>Corymbia hamersleyana</i> on the stony footslopes of the Hamersley range;			
3. Eucalyptus woodland over mixed shrubland / open tussock grassland in Incised to deeply incised gullies on mid to lower slopes of the Hamersley Range;			
4. Mixed Acacia shrubland with emergent <i>Corymbia hamersleyana</i> on Minor flowlines of the stony footslopes of the Hamersley Range;			
5. Open mixed Acacia shrubland / Hummock grassland vegetation of the stony undulating			

plain;

6. Mixed Acacia shrubland / Hummock grassland vegetation of the minor drainage lines dissecting the stony undulating plain;

7. Variable mixed Acacia shrubland vegetation of the previously disturbed and rehabilitated stony undulating plain;

8. Variable mixed Acacia shrubland vegetation of the minor drainage lines dissecting previously disturbed and rehabilitated stony undulating plains;

9. Open mixed Acacia shrubland / Hummock grassland vegetation of the stony colluvial plain / lower footslopes of the Hamersley Range;

10. Scattered *Corymbia hamersleyana* low trees, over Mixed Acacia shrubland / open Hummock grassland vegetation of minor drainage lines on the Stony colluvial plain / lower footslopes of the Hamersley Range;

11. Previously disturbed and Rehabilitated Mixed Acacia shrubland vegetation of the stony colluvial plain / lower slopes of the Hamersley Range.

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 Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). This subregion is characterised by sedimentary ranges and plateaux, dissected by gorges (basalt, shale and dolerite), with Mulga low woodland over bunch grasses on fine textured soils in valley floors, and Eucalyptus leucophloia over *Triodia brizoides* on skeletal soils of the ranges (Kendrick, 2001).

Botanists from Rio Tinto carried out a flora and vegetation survey over of the application area (Rio Tinto, 2010). Eleven vegetation communities and disturbed communities were identified during the survey (Rio Tinto, 2010).

Six vegetation communities were recorded within the 'Brockman Pit 2 Waste Dump Rehabilitation Re-design'; area and these comprised of a total of 111 native flora species, belonging to 57 genera and 33 families (Rio Tinto, 2010).

Two vegetation communities were recorded within the 'Brockman Pit 2 Waste Dump Extension'; area and these comprised of a total of 112 native flora species, belonging to 58 genera and 30 families (Rio Tinto, 2010).

Three vegetation communities were recorded within the 'Nammuldi Lens E/F 2 Waste Dump extension' area and these comprised of a total of 106 native flora species, belonging to 55 genera and 28 families (Rio Tinto, 2010).

The average rainfall (Tom Price weather station) is 400 millimetres with most rainfall occurring between December and June, however for the 12 months leading up to the survey the rainfall was significantly lower than average at 225 millimetres which lead to a reduced summer rainfall season (Rio Tinto, 2010). Given this summer period has an improved probability for effective plant growth (Kendrick, 2001), less species diversity may have been present during the survey. The total number of species recorded in the the survey area is considered to be within the expected range given the survey area size in this locality, survey undertaken within a sub-optimal season, and is considered to represent average species richness (Rio Tinto, 2010). Species recorded within the three study regions are considered typical of the local area and the Pilbara Bioregion (Rio Tinto, 2010).

Two introduced flora species have been identified within the application area or the surrounding vegetation. These being: *Cenchrus ciliaris* (Buffel Grass), and *Malvastrum americanum* (Spiked Malvastrum) (Rio Tinto, 2010). Within the survey areas variable locations are typically occupied by 10-50 individuals, however, given the poor seasonal growth conditions prior to the survey, it is considered that the number of weed species and the individual numbers would potentially be higher with more favourable growth conditions (Rio Tinto, 2010). Care must be taken to ensure that the proposed clearing activities do not spread or introduce any 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 control condition.

No Declared Rare Flora or Threatened Ecological Communities have been recorded within the application area (GIS Database; Rio Tinto, 2010). One priority species *Sida sp.* Barlee Range (S. van. Leeuwen 1642) (P3) was

recorded at 70 locations within the 'Brockman Pit 2 Waste Dump Rehabilitation Re-design' area (Rio Tinto, 2010). This species typically occupies steep slopes and deeply incised gullies of the of the lower slopes of parts of the Hamersley Ranges (Rio Tinto, 2010). The survey indicated that this species is consistently present in the incised gullies and Rio Tinto (2010) suggest it is likely that comparable gullies on at least the north facing slopes of the ranges in the Brockman area would support this species. The assessing officer has reviewed the Western Australian Museum's Florabase and the information provided by the applicant and it appears that this species has wide ranging distributions across the Hamersley Ranges of the Pilbara region (Western Australian Herbarium, 2010).

The assessing officer has conducted a search of the Western Australian Museum's online fauna database, centred on the coordinates 22 42 60'S, 117 33 65'E, with a radius of 40 kilometres. Seven amphibian, 165 avian, 20 mammalian and 74 reptilian species have been identified as potentially occurring in the search area (Western Australian Museum, 2010). These results indicate that the vegetation within the application area and the surrounding lease area may comprise of suitable habitat for high diversity of avian and reptilian species.

Vegetation communities within the application area are considered common and widely distributed within the Pilbara Bioregion, and are unlikely to be of higher biodiversity than the surrounding areas (Rio Tinto, 2010; Shepherd, 2007; GIS Database). The proposed clearing is likely to have a localised impact on biological diversity in an area of native vegetation, Rio Tinto (2010) consider the application areas to have low to moderate biodiversity, however the vegetation survey was undertaken subsequent to a period of lower than average annual rainfall.

Methodology Kendrick (2001)
Rio Tinto (2010)
Shepherd (2007)
Western Australian Herbarium (2010)
GIS Database:
- Declared Rare and Priority Flora List
- Interim Biogeographic Regionalisation of Australia
- Jeerinah 50cm Orthomosaic - Landgate 2004
- Pre European Vegetation

(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

The assessing officer has conducted a search of the Western Australian Museum's online fauna database, centred on the coordinates 22 42'60"S, 117 33'65"E, with a radius of 40 kilometres. Seven amphibian, 165 avian, 20 mammalian and 74 reptilian species have been identified as potentially occurring in the search area (Western Australian Museum, 2010).

No systematic or targeted fauna surveys have been undertaken within the application area nor have any been undertaken in the recent past (Rio Tinto, 2010). Rio Tinto (2010) have undertaken a desktop search of the Department of Environment and Conservation's (DEC) Threatened Fauna Database within a 50 kilometre buffer to identify species of conservation significance. A total of three Schedule 1 and one schedule 4 taxa, along with nine Priority taxa were listed.

After consideration of the results of the Western Australian Museum (2010) online fauna database search and the Department of Environment and Conservation's (DEC) Threatened Fauna Database search, the following species of conservation significance could potentially utilise the application area:

- * *Amytornis striatus striatus* (Striated Grasswren) listed DEC Priority Four;
- * *Ardeotis australis* (Australian Bustard) listed DEC Priority Four;
- * *Burhinus grallarius* (Bush Stone - curlew) listed Priority Four;
- * *Dasyurus hallucatus* (Northern Quoll) listed Schedule 1;
- * *Falco peregrinus* (Peregrine Falcon) listed Schedule 4;
- * *Lagorchestes conspicillatus leicharddti* (Spectacled Hare Wallaby) listed DEC Priority Three;
- * *Leggadina lakedownensis* (Lakeland down's short-tailed mouse) listed DEC Priority Four;
- * *Liasis olivaceus barroni* (Pilbara Olive Python) listed Schedule 1;
- * *Macroderma gigas* (Ghost Bat) listed DEC Priority Four;
- * *Notoscincus butleri* (Lined soil - crevice skink) listed DEC Priority Four.
- * *Pseudomys chapmani* (Western Pebble-mound Mouse) listed DEC Priority Four;
- * *Rhinonicteris aurantius* (Orange leaf-nosed Bat) listed Schedule 1 and;
- * *Sminthopsis longicaudata* (Long-tailed Dunnart) listed DEC Priority Four.

Two broad terrestrial fauna habitat types have been identified within the application area and surrounding vegetation based on information provided by Rio Tinto (2010), as well as the assessment of aerial imagery and topographic information.

These are:

- * Rocky slopes dominated by low open Eucalyptus woodland with incised to deep incised gullies and large and small rocky overhangs; and;
- * Stoney footslopes dominated by Acacia shrublands and minor creeklines (Rio Tinto, 2010).

These habitat types are both common and widespread in the Pilbara bioregion (Kendrick, 2001; Rio Tinto, 2010). No other significant fauna habitats such as waterholes, termite mounds, sandy banks or significant tree hollows were observed (Rio Tinto, 2010). Vegetation condition varies from completely degraded to excellent with the parts of the application area being in close locality to highly disturbed areas and mine infrastructure. It is likely that equal or higher quality vegetation and fauna habitats would exist throughout the surrounding area given the Pilbara region remains relatively uncleared (Kendrick, 2001). The application area is unlikely to function as a significant habitat corridor for fauna movement (Rio Tinto, 2010; GIS Database). Aerial imagery demonstrates that part of the application area is situated adjacent to highly degraded areas which are being utilised for mining related purposes (i.e. an open pit, waste dump and access tracks) (Rio Tinto, 2010). The proximity to existing mine infrastructure could also be considered to act as a deterrent to many native fauna species, thereby minimising the potential for these species to frequent the area.

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

Methodology Kendrick (2001)
Rio Tinto (2010)
Western Australian Museum (2010)
GIS Database:
- Interim Biogeographic Regionalisation of Australia
- Jeerinah 50cm Orthomosaic - Landgate 2004
- Pre European Vegetation

(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 datasets, there are no known records of Declared Rare Flora (DRF) or Priority Flora species within the application area (GIS Database).

A flora and vegetation survey was undertaken by botanists from Rio Tinto across the application area (3 separate areas) between 13 April and 18 April 2010 (Rio Tinto, 2010). Previous survey results in the general area of Brockman 2 mine area and the Nummuldi iron ore lease near the Brockman 2 mine area have also been incorporated into this clearing permit application. No species of DRF were recorded within the application area (Rio Tinto, 2010). Two DRF species known for the Pilbara; *Thryptomene wittweri* and *Lepidium catapycnon* were not recorded within the application area. While there was some suitable habitat for *T. wittweri* (mountain crests of >1000m elevation), the mountain crest of Mount Brockman within the application area did not contain this species (Rio Tinto, 2010). Suitable habitat for *L. catapycnon* being stoney footslopes and hills occur within the application areas however the nearest known populations are ~100 kilometres to the south (Rio Tinto, 2010). Based on the known survey information, the proposed clearing is unlikely to impact on any DRF species.

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

Methodology Rio Tinto (2010)
GIS Database:
- Declared Rare and Priority Flora List

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

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

There are no known Threatened Ecological Communities (TEC's) within the application area (Rio Tinto, 2010; GIS Database), however, the application area is within the buffer zone of the Themeda Grasslands TEC. No vegetation communities that are described as the Themeda Grasslands TEC were recorded within the application area. The nearest known TEC is located approximately 15 kilometres north-east of the application area (GIS Database). Given the distance between the proposal and the nearest known TEC, the proposed clearing is not likely to impact on the conservation of that TEC.

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

Methodology Rio Tinto (2010)
GIS Database:

- Clearing Regulations - Environmentally Sensitive Areas
- 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 areas falls within the Pilbara IBRA bioregion (GIS Database). Shepherd (2007) report that approximately 99.95% of the pre-European vegetation remains in this bioregion.

The vegetation in the application areas has been mapped as Beard Vegetation Association 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana* (GIS Database) and 175: Short bunch grassland - savannah / grass plain (Pilbara). *Astrebla* mixed open tussock grassland (GIS Database).

According to Shepherd (2007) approximately 100% of Beard Vegetation Association 82 remains within the Pilbara bioregion (see table below).

According to the Bioregional Conservation Status of Ecological Vegetation Classes, the conservation status for the Pilbara Bioregion and Beard vegetation associations' 82 and 175 is of 'Least Concern' (Department of Natural Resources and Environment, 2002) (see table).

While 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 the vegetation association within the bioregion is not likely to be impacted on 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	17,804,187	17,794,646	~99.95%	Least Concern	~6.32% (6.32)
Beard veg assoc. - State					
82	2,565,901	2,565,901	~100%	Least Concern	~10.2% (10.2)
175	526,206	524,861	~99.7	Least Concern	~4.2% (4.2)
Beard veg assoc. - Bioregion					
82	2,563,583	2,563,583	~100%	Least Concern	~10.2% (10.2)
175	507,036	507,006	~100%	Least Concern	4.2% (4.2)

* Shepherd (2007)

** 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.

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:
- 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

There are no permanent wetlands or watercourses within the application area (GIS Database). Vegetation to be cleared is not associated with any major watercourses, wetlands or wetland dependant vegetation, with the closest major wetland (along Duck Creek) located 74 kilometres to the west of the vegetation survey areas (Rio Tinto, 2010). Several ephemeral creek systems and flow lines traverse the application area (GIS Database). These watercourses are minor natural drainage channels that are widespread across the Pilbara landscape and are responsible for quickly dispersing floodwaters after significant rainfall events.

The vegetation communities growing in association with the watercourses are not unique and are considered common and widespread in the Pilbara bioregion (Shepherd, 2007; GIS Database). The proposed clearing is unlikely to significantly impact on vegetation communities growing in association with these minor ephemeral creek systems.

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

Methodology Rio Tinto (2010)
Shepherd (2007)
GIS Database:
- Hydrography, linear_1

(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 Geographic Information System rangeland mapping, the application area is comprised of the Newman Land System and the Boolgeeda Land System (Van Vreeswyk et al., 2004; GIS Database).

The Newman Land System consists of rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands which typify much of the Pilbara (Van Vreeswyk et al., 2004). The majority of the vegetation present appears to occur on the landform units: 'Plateaux, ridges, mountains and hills'; and 'Lower slopes' (Van Vreeswyk et al., 2004; GIS Database).

The Boolgeeda Land System consists of stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and mulga shrublands (Van Vreeswyk et al., 2004). The majority of the vegetation present appears to occur on the landform units: 'Stoney Lower Plains' and 'Stoney Slopes and Upper Plains' (Van Vreeswyk et al., 2004; GIS Database).

Both land systems within the application area have a high resistance to soil erosion due to the stony surface materials and red loamy earths present within the soils. According to Van Vreeswyk et al. (2004), approximately 99% of the Newman Land System and 100% of the Boolgeeda Land System is not affected by soil erosion. These landscapes are at the end point of millions of years of erosion and withstand massive rainfall events on an annual basis without any appreciable land degradation or erosion. The proposed clearing is likely to expose surface mantles within the application area which may increase surface water run-off, however, the stoney nature of the surface materials is likely to limit the potential for wind and/or water erosion.

Groundwater salinities within the application area have been recorded in the range of 500 - 1,000 milligrams/Litre Total Dissolved Solids (GIS Database). The application area experiences an average annual rainfall of approximately 399 millimetres (Bureau of Meteorology, 2008), with most of the rainfall occurring between December and March (Rio Tinto, 2010). Large rainfall events can be associated with cyclonic activity resulting in flash flooding and overland sheetflow (Rio Tinto, 2010). Hamersley Iron has applied to clear 45.3 hectares within an application area of 45.5 hectares (Hamersley Iron Pty Ltd, 2010), much of this area has been previously disturbed (Rio Tinto, 2010). No permanent watercourses, drainage systems or wetlands are located within the application area (GIS Database). The proposed clearing is not likely to result in any increases in land salinisation on or off-site.

As a result, water logging is unlikely to be increased either on or off site.

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

Methodology Bureau of Meteorology (2008)
Hamersley Iron Pty Ltd (2010)
Rio Tinto (2010)
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 application area is not situated within a Department of Environment and Conservation managed conservation area (GIS Database). The nearest conservation estate is the Karijini National Park which is located approximately 57 kilometres east of the application area (GIS Database). Given the distance between the application area and the nearest conservation area, the proposed clearing is not likely to impact on the conservation values of the Karijini National Park.

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

Methodology GIS Database:
- DEC Tenure (Category)

(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, drainage systems or wetlands within the application area (GIS Database). The land systems associated with the application area has high resistance to erosion (Van Vreeswyk et al., 2004), thereby reducing the risk of sediment export which may result in sedimentation and turbidity in any nearby watercourses. The proposed clearing is unlikely to impact on the quality of surface water in the local area.

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the Millstream Water Reserve which is located approximately 16 kilometres north of the application area (GIS Database). The proposed clearing activities will involve clearing 45.3 hectares of native vegetation for the purposes of waste dump extensions, waste dump rehabilitation and low grade ore stockpiles, across an application area of approximately 45.5 hectares (Hamersley Iron Pty, 2010). Given the distance between the application area and the nearest water supply area, the proposed clearing is unlikely to impact on the quality of the Millstream Water Reserve.

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

Methodology Hamersley Iron Pty Ltd (2010)
Van Vreeswyk et al., (2004)
GIS Database:
- Hydrography, linear_1
- Public Drinking Water Source Area (PDWSA's)

(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 the Hamersley bioregion and is characterised by a climate that is semi-arid to semi-tropical with a summer rainfall season and a dry winter season (Rio Tinto, 2010). The annual average evaporation rate for the general area is 3400 millimetres per annum (GIS Database). The application area experiences an average annual rainfall (determined from the Tom Price weather station) of 399 millimetres with most rainfall occurring between December and June (Bureau of Meteorology, 2008).

There are no permanent water courses or wetlands within the application areas (Rio Tinto, 2010; GIS Database). Large rainfall events can be associated with cyclonic activity resulting in flash flooding and overland sheetflow (Rio Tinto, 2010).

Numerous ephemeral watercourses are located across the landscape, and these are responsible for quickly dispersing floodwaters after significant rainfall events, thereby reducing peak flood heights (GIS database). Run off from the application area flows towards Duck Creek located approximately 6.5 kilometres north of the application area (Rio Tinto, 2010). The application area is within the Ashburton River catchment area which covers 78,777,743 hectares (GIS Database). Given the size of the area to be cleared (45 hectares) in relation to the size of the catchment area, the proposed clearing is not likely to increase the incidence or intensity of flooding.

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

Methodology Bureau of Meteorology (2008)
Rio Tinto (2010)
GIS Database:
- Evaporation Isopleths
- Hydrography, linear_1
- Hydrography Catchments - catchments

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

Comments

There is one native title claim over the area under application: WC97/089. This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (ie. 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 known 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 Sites of Aboriginal Significance are damaged through the clearing process. The proponent has identified four areas that are Aboriginal Heritage Sites and form part of the application area (Hamersley Iron Pty Ltd, 2010). The proponent has provided a commitment that no native vegetation clearing will be undertaken until a s18 under the *Aboriginal Heritage Act 1972* has been received.

The clearing permit application was advertised on 27 September 2010 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received stating no objection to the proposed clearing.

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 Hamersley Iron Pty Ltd
GIS Database:
- Aboriginal Sites of Significance
- Native Title Determined
- Native Title Federal
- Native Title NNT

4. References

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- 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.
- Hamersley Iron Pty Ltd (2010) Application for a Clearing Permit (Purpose Permit), Brockman 2 Tenement ML4SA, Documentation Accompanying Clearing Permit Application for CPS 3982/1, Prepared by Hamersley Iron Pty Ltd, September 2010.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Kendrick (2001) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 3 (PIL3 - Hamersley subregion) Department of Conservation and Land management, Western Australia.
- Rio Tinto (2010) Flora and Vegetation Assessment of the Proposed Brockman 2, Pit 1 Waste dump extension (B2P1-WDE) and Pit 1 Rehabilitation re-design (B2P1-WDRR), and the Nammuldi Lens E / F 2 Waste Dump extension (NLEF2-WDE). Including supporting documentation for a Native Vegetation Clearing Permit Application.
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- Trudgen, M.E. (1998) A Report on Flora and Vegetation of the Port Kennedy Area. Unpublished report prepared for Bowman Bishaw and Associates, West Perth.
- Van Vreeswyk A.M.E., Payne A.L., Leighton K.A. and Hennig P. (2004) Technical Bulletin - An inventory and condition survey of rangelands in Pilbara Region, Western Australia, No 92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.
- Western Australian Herbarium (2010) FloraBase - The Western Australian Flora. Western Australian Herbarium - Department of Environment and Conservation. Available online from: <http://florabase.dec.wa.gov.au/> Accessed 13 October 2010.
- Western Australian Museum (2010) NatureMap - Mapping Western Australia's Biodiversity - Department of Environment and Conservation. Available online from: <http://naturemap.dec.wa.gov.au/default.aspx>. Accessed 22 October 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.