



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3594/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Iron Ore (Rhodes Ridge) Authorisation Agreement Act 1972
Temporary Reserve 70/4192
Temporary Reserve 70/4267
Local Government Area: Shire of East Pilbara
Colloquial name: Texas and Texas East Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
2.52		Mechanical Removal	Hydrogeological Drilling

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia. Two Beard Vegetation Associations have been mapped within the application areas (GIS Database).</p> <p>18: Low woodland; mulga (<i>Acacia aneura</i>);</p> <p>29: Sparse low woodland; mulga, discontinuous in scattered groups.</p> <p>Mattiske (2008) on behalf of Hamersley Iron Pty Ltd conducted a vegetation survey over the application areas and surrounding vegetation in February 2007. Five vegetation types were identified within the application areas (Mattiske, 2008). These are:</p> <p>Creeklines and Drainage Lines</p> <p>C3) Tall Shrubland of <i>Acacia arida</i>, <i>Acacia bivenosa</i>, <i>Acacia ancistrocarpa</i>, <i>Acacia maitlandii</i>, <i>Acacia monticola</i> with occasional emergent <i>Corymbia deserticola</i> subsp. <i>deserticola</i>, <i>Eucalyptus leucophloia</i> over <i>Gompholobium polyzygum</i>, <i>Rulingia luteiflora</i> and <i>Triodia pungens</i> on sandy-loam soils in minor gullies.</p> <p>Flats and Broad Plains</p> <p>M1) Low woodland to Low open Forest of <i>Acacia aneura</i> var. <i>aneura</i>, <i>Acacia pruinocarpa</i>, <i>Acacia catenulata</i> subsp. <i>occidentalis</i>, <i>Acacia rhodophloia</i>, <i>Grevillea berryana</i> and <i>Psyrax latifolia</i> over <i>Eremophila galeata</i> (ms), <i>Acacia tetragonophylla</i>, <i>Eremophila forrestii</i> subsp. <i>forrestii</i> over <i>Triodia pungens</i> and a range of annual species on sandy-loam flats and broad plains.</p> <p>M5) Low Woodland of <i>Acacia rhodophloia</i>, <i>Acacia aneura</i> var. <i>aneura</i>, <i>Acacia pruinocarpa</i> and <i>Grevillea berryana</i> and <i>Psyrax latifolia</i> over <i>Acacia tetragonophylla</i>, <i>Eremophila forrestii</i> subsp. <i>forrestii</i></p>	<p>Hamersley Iron Pty Ltd is proposing to clear up to 2.52 hectares of native vegetation (GIS Database; Pilbara Iron, 2007). The application areas are located approximately 37 kilometres north-west of Newman (GIS Database).</p> <p>The proposed clearing is for the purpose of hydrogeological drilling, as well as access tracks (Pilbara Iron, 2007).</p> <p>Clearing will be done using the raised blade technique where practicable or scrub rake level terrain. Where already cleared tracks require maintenance, the track may be graded using blade down.</p>	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)</p>	<p>Vegetation descriptions and vegetation condition were derived from descriptions by Mattiske Consulting Pty Ltd (Mattiske, 2008).</p> <p>Hamersley Iron Pty Ltd originally applied to clear up to 4.6 hectares of native vegetation for clearing permit application CPS 3594/1. On 30 March 2010, Hamersley Iron Pty Ltd requested the application areas be amended to exclude works located on Exploration Licence 47/1228 as an exemption could be applied for this area. The area now applied for clearing is up to 2.52 hectares on Temporary Reserve 70/4192 and Temporary Reserve 70/4267.</p>

over *Triodia pungens* and a range of annual species on sandy-loam open flats and broad plains.

Ranges Hills and Hillslopes

S1) Hummock grassland of *Triodia basedowii* with pockets of *Triodia pungens* with emergent *Eucalyptus gamophylla*, *Eucalyptus leucophloia*, *Acacia aneura* var. *aneura*, *Acacia pruinocarpa*, *Psyrax latifolia* and *Grevillea berryana* over *Eremophila galeata* (ms), *Eremophila forrestii* subsp. *forrestii*, *Acacia adsurgens*, *Indigofera monophylla* and a range of annual species on gravelly soils on lower slopes.

S2) Hummock grassland of *Triodia basedowii* with emergent *Eucalyptus leucophloia* and *Eucalyptus gamophylla* over *Eremophila latrobei*, *Acacia adoxa* var. *adoxo*, *Acacia bivenosa*, *Acacia ancistrocarpa*, *Acacia kempeana*, *Acacia hilliania*, *Indigofera monophylla* and a range of annual species on gravelly soils on mid and upper slopes of small ranges.

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 areas are located within the Hamersley subregion of the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). This subregion generally consists of mountainous areas of Proterozoic sedimentary ranges and plateaux, dissected by gorges (basalt, shale and dolerite) (Kendrick, 2001). The Hamersley subregion generally contains 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).

The vegetation within the application areas consists of Beard Vegetation Associations 18 and 29, which are considered both common and widespread throughout the Pilbara region, with approximately 100% of these pre-European vegetation types remaining (GIS Database; Shepherd, 2007).

According to available databases, no Declared Rare Flora (DRF) or Priority Flora species occur within the application areas (GIS Database).

The application areas have been covered by flora surveys conducted by Matiske Consulting in February 2007, and by Rio Tinto in May 2007. The diversity of species that were recorded during the vegetation surveys were quite variable, which may be attributed to variations in sampling and representation (Matiske, 2008; Pilbara Iron, 2007). Several of the vegetation communities present within the application areas are considered to support a high diversity of species (Pilbara Iron, 2007). According to Pilbara Iron (2007), the clearing footprint will impact on less than 0.01% of these diverse community types within the wider Hope Downs Infrastructure corridor survey area.

No DRF or Threatened Ecological Communities were noted across the application areas (GIS Database; Pilbara Iron, 2007). Two populations of the Priority 3 flora species *Themeda* sp. Hamersley Station were recorded within the application areas (Pilbara Iron, 2007). This species is not restricted to the application areas and is widely distributed throughout the Pilbara bioregion (Pilbara Iron, 2007; Western Australian Herbarium, 1998).

Four introduced flora species were identified during the vegetation survey. These are:

- *Setaria verticillata* (Whorled Pigeon Grass);
- *Malvastrum americanum* (Spiked Malvastrum);
- *Bidens bipinnata* (Beggartick);
- *Urochloa masambicensis* (Sabi Grass).

None of these species are listed as a Declared Weed by the Department of Agriculture and Food. Care must be taken to ensure that the proposed clearing activities do not spread introduced species to non infested areas. Should the permit be granted, it is recommended that the appropriate conditions be imposed on the permit for the purpose of weed management.

A fauna survey was conducted over the application areas and the surrounding vegetation in May 2008 (Ninox, 2008). Although several species of conservation significance were identified as potentially occurring within the application areas, Ninox (2008) considered that the conservation status of these species would not be impacted

upon by the proposed clearing.

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

Methodology Kendrick (2001)
Mattiske (2008)
Ninox (2008)
Pilbara Iron (2007)
Shepherd (2007)
Western Australian Herbarium (1998)
GIS Database:
-Declared Rare and Priority Flora
-IBRA WA (Regions - Sub Regions)
-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

According to available datasets, there are no known records of threatened fauna within the application areas (GIS Database). The assessing officer has conducted a search of the Department of Environment and Conservation's (2007) online fauna database, centred on the coordinates 23°07'22" South, 119°27'20" East, with a radius of 20 kilometres. This search identified 5 Mammalian and 26 Reptilian species as potentially occurring within the search area (DEC, 2007). Of these, three species of conservation significance have previously been recorded within the search area:

Schedule 1 - Fauna that is rare or likely to become extinct, Wildlife Conservation (Specially Protected Fauna) Notice, 2010: *Liasis olivaceus* subsp. *barroni* (Pilbara Olive Python) - listed as 'Vulnerable' under the *Environmental Protection and Biodiversity Conservation Act 1999*;

P1 - Department of Environment and Conservation Priority Fauna List: *Ramphotyphlops ganeii*;

P4 - Department of Environment and Conservation Priority Fauna List: *Pseudomys chapmani* (Western Pebble-mound Mouse).

Ninox Wildlife Consulting (Ninox, 2008) conducted a fauna survey over the application areas in May 2008. This study identified 31 vertebrate species of conservation significance with the potential to occur within the application areas based on available habitat (Ninox, 2008). However, the study did not identify any invertebrate species of conservation significance (Ninox, 2008).

Ninox Wildlife Consulting identified the following broad habitat types within the survey area (Ninox, 2008):

1. Grassland of *Aristida* and *Eragrostis* species with emergent *Acacia aneura* var. *aneura* over occasional low subshrub and patch of *Triodia pungens* on cracking clays on flats;
2. Low Open Woodland of *Acacia aneura* var. *aneura*, *Acacia pruinocarpa* over *Acacia tetragonophylla*, *Eremophila forrestii* subsp. *forrestii* over *Triodia pungens* and a range of annual species on open sandy-loam flats and broad plains;
3. Hummock Grassland of *Triodia basedowii* with pockets of *Triodia pungens* with emergent *Eucalyptus gamophylla*, *Eucalyptus leucophloia*, *Acacia aneura* var. *aneura*, *Acacia pruinocarpa*, *Psyrdrax latifolia* and *Grevillea berryana* over *Eremophila fraseri* subsp. *galeata* (ms), *Eremophila forrestii* subsp. *forrestii*, *Acacia adsurgens*, *Indigofera monophylla* and a range of annual species on gravelly soil on lower slopes;
4. *Eucalyptus camaldulensis* var. *obtusata* over *Acacia citrinoviridis* and *Acacia coriacea* subsp. *sericophylla* over *Petalostylis labicheoides*, *Acacia pyrifolia*, *Melaleuca lasiandra* over *Tephrosia rosea* var. *clementii*, *Themeda triandra* and *Cleome viscosa* on major creeklines with sandy soils.

Despite the known and potential occurrence of several fauna species of conservation significance, Ninox (2008) considered that the conservation status of these species would not be impacted by the proposed development. The small amount of proposed clearing (2.52 hectares) within the application areas compared to the larger Hope Downs rail project area presents a low risk of significant impact occurring to any conservation significant fauna, or their habitats (Ninox, 2008). The clearing of vegetation within the application areas is therefore considered unlikely to impact on 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 DEC (2007)
Ninox (2008)

GIS Database:
-Threatened Fauna

(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 within the application areas (GIS Database). The nearest recorded location of a DRF (*Lepidium catapycnon*) occurs approximately 2.4 kilometres east of the eastern application area (GIS Database).

The application areas have been covered by multiple flora surveys conducted by Mattiske Consulting between 2005 and 2008, and by Rio Tinto in May 2007. No DRF were recorded within the application areas during these surveys (Mattiske, 2008; Pilbara Iron, 2007).

Two populations of the Priority 3 species *Themeda* sp. Hamersley Station occur within the application areas. *Themeda* sp. Hamersley Station is described as a tussocky perennial, grass-like or herb, approximately 0.9-1.8 metres tall (Western Australian Herbarium, 1998). This species is not restricted to the application areas and is distributed throughout the Pilbara bioregion. The clearing of vegetation within the application areas is unlikely to affect the conservation status of this species.

It is therefore considered that the clearing of native vegetation within the application areas is unlikely to impact on the conservation status and continued existence of local and regional rare or priority flora.

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

Methodology Mattiske (2008)
Pilbara Iron (2007)
Western Australian Herbarium (1998)
GIS Database:
-Declared Rare 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

There are no Threatened Ecological Communities (TEC's) within the application areas (GIS Database). The closest TEC is located approximately 44 kilometres south-east of the eastern application area and the closest Priority Ecological Community (PEC) being located approximately 31 kilometres north-east of the eastern application area (GIS Database).

Pilbara Iron (2007) reports that no TEC's or PEC's were identified within the application areas. Due to the spatial separation between the application areas and the closest TEC's and PEC's, it is unlikely that the clearing of 2.52 hectares would have any significant impact on the conservation values of these communities.

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

Methodology Pilbara Iron (2007)
GIS Database:
-Threatened Ecological Sites (Communities)

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

Comments Proposal is not at variance to this Principle

The application areas are located within the Pilbara Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Shepherd (2007) report that approximately 99.95% of the pre-European vegetation still exists in the Pilbara Bioregion. The vegetation in the application area is broadly mapped as Beard Vegetation Associations 18: Low woodland; mulga (*Acacia aneura*); and 29: Sparse low woodland; mulga discontinuous in scattered groups (Shepherd, 2007). According to Shepherd (2007) there is approximately 100% of these vegetation type remaining in the Pilbara Bioregion and the State (see table below).

According to the Bioregional Conservation Status of Ecological Vegetation Classes the conservation status for Beard Vegetation Associations 18 and 29 within the Pilbara Bioregion is of 'Least Concern' (Department of Natural Resources and Environment, 2002).

Although several large scale mining operations are located within a 50 kilometre radius of the application areas, the Pilbara Bioregion remains largely uncleared (GIS Database). As a result, the conservation of the vegetation associations within the bioregion is not likely to be impacted upon by the proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,188	17,794,647	~99.95	Least Concern	6.32%
Beard veg assoc. – State					
18	19,892,305	19,890,195	~100	Least Concern	~2.1
29	7,903,991	7,903,991	~100	Least Concern	~0.3
Beard veg assoc. – Bioregion					
18	676,557	676,557	~100	Least Concern	~16.8
29	1,133,219	1,133,219	~100	Least Concern	~1.9

* 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 may be at variance to this Principle

According to available GIS Databases there no wetlands or watercourses within the application areas (GIS Database). Analysis of aerial photography suggests that an ephemeral drainage line may traverse the western application area and that the central application area may be present within a floodplain (GIS Database).

The application areas are located in a semi-desert-tropical region, which has an average annual rainfall of approximately 310.2 millimetres falling mainly during the summer months (BoM, 2010). The region experiences a pan evaporation rate of approximately 3,200 millimetres per year (BoM, 2010). Hence, the presence of surface water resulting from significant rain events is relatively short-lived.

According to Pilbara Iron (2007), there are no swamps, local wetlands, 'Wetlands of Regional Significance' or 'Wetlands of National Significance' occurring within the application areas. Pilbara Iron (2007) has advised that there are several minor non-perennial drainage lines present within the application areas, although these are only likely to flow following significant rainfall.

Eucalypt-lined creeks of the area are significant to vertebrate fauna in that they support a range of species not found elsewhere (Ninox, 2008). However, the long-term presence of cattle and the subsequent impact on understorey vegetation and soils has affected the capacity of this habitat to support a range of terrestrial species (Ninox, 2008). Analysis of aerial photography would suggest that the Eucalyptus-lined creeks habitat does not occur within the application areas (GIS Database).

Based on the above, the proposed clearing may be at variance to this Principle. Given the extent of similar creekline vegetation types remaining in the local area, the proposed clearing is not likely to significantly impact on the availability or conservation values of these vegetation types.

Methodology BoM (2010)
Pilbara Iron (2007)
GIS Database:
-Hydrography, Linear
-Ophthamia, 50cm Orthomosaic

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

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

According to available databases, the application areas are comprised of the Newman Land System and

Wannamunna Land System (GIS Database).

The Newman Land System is described as rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). An analysis of aerial photography for the application areas reveals it is most likely to fall within the 'Lower slopes' landform unit. Landscapes present within the Newman Land System are at the end point of millions of years of erosion and withstand massive rainfall events on an annual basis without any appreciable increase in land degradation or erosion (Pilbara Iron, 2007). Approximately 99% of the Newman Land System does not suffer from soil erosion and with approximately 91% of the vegetation remaining in the Newman Land system being in very good condition (Van Vreeswyk et al, 2004).

The Wannamunna Land System is described as hardpan plains and internal drainage tracts supporting mulga shrublands and woodlands (and occasionally eucalypt woodlands) (Van Vreeswyk et al., 2004). This system generally has a low susceptibility to erosion (Van Vreeswyk et al., 2004). An analysis of aerial photography reveals the application areas are most likely to fall within the 'Stony plains' and 'Hardpan plains' landform units (GIS Database; Van Vreeswyk et al., 2004). The soils of these land units (red loamy earths, red-brown hardpan shallow loams) are not susceptible to erosion due to a surface mantle of pebbles of ironstone and other rocks (Van Vreeswyk et al., 2004).

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

Methodology Pilbara Iron (2007)
Van Vreeswyk et al. (2004)
GIS Database:
-Ophthalmia 50cm Orthomosaic
-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 areas are not situated within a Department of Environment and Conservation managed conservation area (GIS Database). The nearest conservation estate is Karijini National Park, which is situated approximately 82 kilometres west of the western application area (GIS Database). Based on the distance between the proposal and the nearest conservation area, the proposed clearing is not likely to impact on the conservation values of 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

(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 areas are not located within a Public Drinking Water Source Area (PDWSA) (GIS Database).

The application areas are located within a *Rights in Water Irrigation Act* (RIWI Act), 1914 Groundwater Area (GIS Database). The proponent is required to obtain a Beds and Banks Permit in order to extract groundwater in this area.

The application areas are located within the Pilbara Groundwater Area (GIS Database). Any extraction of groundwater in this area will require a groundwater licence. The groundwater salinity within the application areas are approximately 500 - 1000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. Given the size of the area to be cleared (2.52 hectares) compared to the size of the Hamersley Groundwater Province (10,166,832 hectares) (GIS Database), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

There are no known groundwater dependent ecosystems within the application areas (GIS Database). The proposed clearing is not likely to occur in a location, or to an extent whereby an impact to groundwater is likely to occur (Pilbara Iron, 2007).

There are no permanent watercourses or wetlands within the application areas although several drainage areas are present (GIS Database; Pilbara Iron, 2007). These non-perennial watercourses tend to have high levels of sedimentation and turbidity after rainfall events (Pilbara Iron, 2007; Van Vreeswyk et al., 2004). Therefore, the small amount of clearing is unlikely to increase the sediment load of the surface water significantly. Compared to surrounding uncleared areas, sediment loads will remain relatively unchanged (Pilbara Iron, 2007).

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

Methodology Pilbara Iron (2007)
Van Vreeswyk et al. (2004)
GIS Database:
-Groundwater Provinces
-Groundwater Salinity, Statewide
-Hydrography, Linear
-Potential Groundwater Dependent Ecosystems

(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 (BoM, 2010). Any surface water resulting from rain events is expected to be relatively short-lived (ANRA, 2007). There are no permanent watercourses or wetlands within the application areas (GIS Database).

Natural flood events do occur in the Pilbara region following cyclonic activity and heavy rainstorms. 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 (2.52 hectares), in relation to the Fortescue River Upper catchment area (2,975,192 hectares) (GIS Database; Pilbara Iron, 2007).

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

Methodology ANRA (2007)
BoM (2010)
Pilbara Iron (2007)
GIS Database:
-Hydrographic Catchments - Catchments
-Hydrography, Linear

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

Comments

There is one Native Title Claim (WC99/004) over the areas under application (GIS Database). 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 (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a permit is not a future act under the *Native Title Act 1993*.

According to available databases there are no known Aboriginal Sites of Significance within the application areas (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 1 March 2010 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received during the public comment period.

Hamersley Iron Pty Ltd originally applied to clear up to 4.6 hectares of native vegetation for clearing permit application CPS 3594/1. On 30 March 2010, Hamersley Iron Pty Ltd requested the application area be amended to exclude works located on Exploration Licence 47/1228 as an exemption could be applied for this area. The area now applied for clearing is up to 2.52 hectares on Temporary Reserve 70/4192 and Temporary Reserve 70/4267.

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

4. Assessor's comments

Comment

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

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

5. References

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- DEC (2007) NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. Available online from: <http://naturemap.dec.wa.gov.au/> Last accessed 12 April 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.
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- Ninox (2008) A Vertebrate Fauna Survey of the Proposed Hope Downs 4 Infrastructure Corridor, Near Newman, Western Australia. Ninox Wildlife Consulting, Western Australia.
- Pilbara Iron (2007) Botanical Survey Work for Texas Drilling Program AR-07-02229 & AR-07-02230. Information for assessing officer, Native Vegetation Assessment Branch, Department of Mines and Petroleum. Rio Tinto, 2010.
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- 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, Western Australia.
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6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
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.