



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8093/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Fortescue Metals Group Limited

1.3. Property details

Property: Mining Lease 47/1523
Mining Lease 47/1524

Local Government Area: Shire of Ashburton
Colloquial name: Eliwana Minor Works

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
233.6		Mechanical Removal	Mining related infrastructure

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 23 August 2018

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The vegetation of the application area is broadly mapped as the following Beard vegetation associations: 82: Snappy Gum (*Eucalyptus leucophloia*) low woodland over *Triodia wiseana* hummock grassland; and 567: Mulga (*Acacia aneura*) and *Acacia pyrifolia* open shrubland over soft spinifex (*Triodia epactia* / *pungens*) and *T. basedowii* hummock grassland (GIS Database).

The following flora and vegetation surveys were conducted over a broad region surrounding and including the application area:

- Eliwana and Flying Fish Level 2 Flora and Vegetation Survey (Ecoscape, 2015);
- Western Hub Rail Link Level 2 Flora and Vegetation Survey (Ecoscape, 2014); and
- Eliwana Consolidated Detailed Flora and Vegetation Survey (Biota, 2017).

The following vegetation associations were recorded within the application area (FMG, 2018):

AanAprTw - *Acacia 'aneura'*, *A. pruinocarpa* mid open woodland over *Triodia wiseana* mid open hummock grassland

AanTwTe - *Acacia 'aneura'* low woodland over *Triodia wiseana*, *T. epactia* low sparse hummock grassland

AeTwTe - *Acacia exigua*, *A. marramamba* and / or *A. bivenosa* mid sparse shrubland over *Triodia wiseana*, *T. epactia* low open hummock grassland

AiTWEITa - Mosaic: *Acacia inaequilatera* tall sparse shrubland over *Triodia wiseana* low open hummock grassland / *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia angusta*, *T. longiceps*, *T. wiseana* low open hummock grassland

ChAbTw - *Corymbia hamersleyana*, *Eucalyptus leucophloia* subsp. *leucophloia* mid open woodland over *Acacia bivenosa*, *A. synchronica*, *A. ancistrocarpa* mid-tall sparse shrubland over *Triodia wiseana* low sparse hummock grassland

ChAiTw/EIAbTlo - Mosaic: *Corymbia hamersleyana* and / or *Eucalyptus leucophloia* subsp. *leucophloia* low isolated trees over *Acacia inaequilatera* and / or *A. bivenosa* mid-tall sparse shrubland over *Triodia wiseana* low hummock grassland / *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Acacia bivenosa* mid open shrubland over *Triodia longiceps*, *T. wiseana* low open hummock grassland

EgAatTe - *Eucalyptus gamophylla* mid sparse mallee shrubland over *Acacia atkinsiana*, *A. bivenosa*, *A. exigua* tall sparse shrubland over *Triodia epactia*, *T. wiseana* mid hummock grassland

EIAarTwTspr - *Eucalyptus leucophloia* subsp. *leucophloia* mid isolated trees *Acacia arida* mid open shrubland over *Triodia wiseana*, *T. sp. Robe River* (M.E. Trudgen et al. MET 12367) mid hummock grassland

EITa - *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Triodia angusta*, *T. longiceps*, *T. wiseana* low open hummock grassland

EvAcCcERIt - *Eucalyptus victrix* low-mid open woodland over *Acacia citrinoviridis* and / or *Melaleuca glomerata* tall open shrubland over **Cenchrus ciliaris*, *Eriachne tenuiculmis* mid open tussock grassland

EvAcMgERIt - *Eucalyptus victrix* low-mid open woodland over *Acacia citrinoviridis*, *Melaleuca glomerata* tall sparse shrubland over *Eriachne tenuiculmis* mid sparse tussock grassland

ExAcThTe - *Eucalyptus xerothermica* low open woodland over *Acacia citrinoviridis*, *A. bivenosa*, *A. pyrifolia* tall sparse shrubland over *Themeda triandra*, *Chrysopogon fallax* mid tussock grassland over *Triodia epactia* mid hummock grassland

Clearing Description	Eliwana Minor Works. Fortescue Metals Group Limited proposes to clear up to 233.6 hectares of native vegetation within a boundary of approximately 285 hectares, for the purpose of mining related infrastructure. The project is located approximately 90 kilometres west-north-west of Tom Price, within the Shire of Ashburton.
Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994). to Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).
Comment	The vegetation condition was derived from a consolidated vegetation survey conducted by Biota (2017). The proposed clearing is for the construction of accommodation, roads, aerodrome and water infrastructure, associated with the implementation of the larger Eliwana Iron Ore Mine Project.

3. Assessment of application against Clearing Principles

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

Comments	<p>Proposal is not likely to be at variance to this Principle</p> <p>The clearing permit application area is located within the Hamersley subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara Bioregion (GIS Database). The Hamersley subregion can be described as a mountainous area of Proterozoic sedimentary ranges and plateaus dissected by gorges (CALM, 2002).</p> <p>The application area does not intersect any Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs) or known locations of Threatened flora (GIS Database).</p> <p>The vegetation within the application area is considered to be in 'Excellent' to 'Good' condition (FMG, 2018). The majority of the vegetation within the application area is considered to be in a 'Very Good' condition (FMG, 2018).</p> <p>Flora and vegetation surveys encompassing 134,177 hectares in total have been conducted for the Eliwana Mine and Railway Projects (FMG, 2018). The Ecoscape Flying Fish survey (2015) covered approximately 50,485 hectares, comprising a large portion of the consolidated mine survey area. This survey was considered to be more representative of the floristic diversity of the application area as it was conducted over a consolidated location surrounding the application area (FMG, 2018). A total of 429 vascular flora taxa were recorded from the survey, of which 11 were introduced species (FMG, 2018). Most of the species recorded during the survey were considered likely to occur within the survey area (Ecoscape, 2015). The species richness of the survey area was considered to be low-average in comparison to other nearby Pilbara survey areas (Ecoscape, 2015).</p> <p>A consolidated Level 2 terrestrial fauna assessment of the Eliwana Iron Ore Mine Project, covering and surrounding the application area, was conducted by Ecoscape (2017). The assessment involved consulting 41 previous fauna survey reports to develop the fauna survey assessment. Four broad fauna habitat types were mapped by Ecoscape (2017) which intersect the application area. The fauna habitats are as follows:</p> <ul style="list-style-type: none">• Drainage Line / River / Creek (Minor)• Lower Slopes / Hillslopes• Plain (Shrubland)• Plain (Stony / Gibber) <p>The fauna and fauna habitats recorded in the surveys are typical of the region, indicating that the application area is not more biodiverse in comparison to other locations within the Pilbara bioregion (FMG, 2018).</p> <p>Short-range endemic (SRE) fauna could potentially occur within the application area, as 'woodland along</p>
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drainage line' is a broad habitat that potentially harbour SRE invertebrates. No known species that have been recorded within the 'woodland along drainage line' habitat were sampled from the application area (FMG, 2018). However, due to a small area (less than two hectares) of this habitat type occurring within the application area, it is expected that there is a potential for some of these species to occur within the application area.

There are nine weed species recorded from within 10 kilometres of the application area (Biota, 2017), none of which are weeds of National Significance (WONS) or Declared Plants under the *Biosecurity and Agriculture Management Act 2007*. Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. 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 is not likely to be at variance to this Principle.

Methodology

Biota (2017)
CALM (2002)
Ecoscape (2015)
Ecoscape (2017)
FMG (2018)

GIS Database:

- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Flora
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

(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 may be at variance to this Principle

The following four fauna habitats have been recorded within the application area (Ecoscape, 2017):

- Drainage Line / River / Creek (Minor)
- Lower Slopes / Hillslopes
- Plain (Shrubland)
- Plain (Stony / Gibber)

The 'Drainage Line / River / Creek (Minor)' habitat consists of dense, variable shrub layer, sometimes with occasional Eucalypt overstorey. The shrub layer comprises *Acacia*, *Grevillea* over *Themeda* tussock grasses. This habitat is likely to be used by the Peregrine Falcon (*Falco peregrinus*) (Specially Protected – Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2017) and Grey Falcon (*Falco hypoleucos*) (Vulnerable – Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2017) for foraging (FMG, 2018).

The 'Lower Slopes / Hillslopes' habitat consists of rolling hills, footslopes of hills with a hard rocky substrate. Tree strata comprises *Eucalyptus leucophloia*, *Acacia* over a shrub layer of *Senna* and a spinifex hummock grassland. This habitat is likely to support the Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4 – DBCA) (FMG, 2018).

The 'Plain (Shrubland)' habitat consists of mixed *Acacia* (mulga) woodland over spinifex hummock grassland. This habitat is unlikely to support conservation significant fauna species (FMG, 2018).

The 'Plain (Stony / Gibber)' habitat is relatively flat, slightly undulating plain with open shrubland of *Acacia* and *Senna* over a spinifex hummock grassland. This fauna habitat is also characterised by substrate of bedrock with scattered pebbles and stones. This habitat is likely to be used by the Grey Falcon for foraging and support the Western Pebble-mound Mouse (FMG, 2018).

The Western Pebble-mound Mouse is likely to use some of the application area for breeding purposes. While the Western Pebble-mound Mouse may not be able to move into other areas of habitat that will remain undisturbed, individuals or sub-populations remaining in large areas of undisturbed habitat post-disturbance will remain secure. Approximately 110,101 hectares of Western Pebble-mound Mouse habitat has been mapped in the Eliwana area (FMG, 2018), therefore the impact to this species habitat is unlikely to be significant.

The Peregrine Falcon and Grey Falcon are unlikely to be significantly impacted due to their high mobility across the landscape.

Fauna habitats recorded are affected to some extent by grazing and trampling by cattle and feral donkeys in localised areas, but were generally considered to be in good condition (Ecoscape, 2017).

Short-range endemic (SRE) fauna could potentially occur within the application area, as 'woodland along drainage line' is a broad habitat that potentially harbour SRE invertebrates. No known species that have been recorded within the 'woodland along drainage line' habitat were sampled from the application area (FMG, 2018). Approximately two hectares of this habitat type occurs within the application area, therefore the impacts to this habitat are likely to be minimal at a regional scale.

It is likely that the proposed clearing for the minor works will cause a barrier to some species movement within their home ranges, particularly small reptiles and mammals. However, the fauna and fauna habitats found within the application area are widespread in surrounding areas and therefore the impacts are unlikely to be significant at a regional scale.

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

Methodology Ecoscape (2017)
FMG (2018)

(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

There are no known records of Threatened flora within the application area (GIS Database). Flora surveys of the application area did not record any species of Threatened flora (FMG, 2018).

The vegetation associations within the application area are common and widespread within the region (FMG, 2018; GIS Database), and the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened (rare) flora.

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

Methodology FMG (2018)

GIS Database:
- Pre-European Vegetation
- Threatened and Priority Flora

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

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

There are no known TECs located within or in close proximity to the application area (GIS Database). There are two TECs in the Pilbara bioregion: the 'Themeda grasslands on cracking clays (Hamersley Station, Pilbara)' and the 'Ethel Gorge aquifer stygobiont community'. The closest recorded TEC to the application area is the Themeda Grasslands, located approximately 35 kilometres to the north-east of the proposed clearing (FMG, 2018).

Flora and vegetation surveys of the application area did not identify any TECs (FMG, 2018).

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

Methodology FMG (2018)

GIS Database:
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

(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 Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99% of the pre-European vegetation still exists in the Pilbara IBRA Bioregion (Government of Western Australia, 2018). The application area is broadly mapped as Beard vegetation associations 82: Snappy Gum (*Eucalyptus leucophloia*) low woodland over *Triodia wiseana* hummock grassland; and 567: Mulga (*Acacia aneura*) and *Acacia pyrifolia* open shrubland over soft spinifex (*Triodia epactia / pungens*) and *T. basedowii* hummock grassland (GIS Database). Approximately 99% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and

bioregional level (Government of Western Australia, 2018).

Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA managed lands
IBRA Bioregion – Pilbara	17,808,657	17,733,583	99	Least Concern	10.12
Beard vegetation associations – WA					
82	2,565,901	2,553,217	99	Least Concern	11.52
567	777,506	774,895	99	Least Concern	25.38
Beard vegetation associations – Pilbara Bioregion					
82	2,563,583	2,550,898	99	Least Concern	11.53
567	776,823	774,213	99	Least Concern	25.40

* Government of Western Australia (2018)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2018)

GIS Database:
- IBRA 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 watercourses or wetlands within the area proposed to clear (FMG, 2018; GIS Database). Several ephemeral watercourses pass through the application area (GIS Database). Ephemeral watercourses in the region are dry for most of the year, only flowing briefly immediately following significant rainfall (FMG, 2018).

Two vegetation associations within the application area were identified as being potentially Groundwater Dependent Vegetation (GDV) (FMG, 2018):

- EvAcCcERIt - *Eucalyptus victrix* low-mid open woodland over *Acacia citrinoviridis*, *Melaleuca glomerata* tall sparse shrubland over *Eriachne tenuiculmis* mid sparse tussock grassland; and
- EvAcMgERIt - *Eucalyptus victrix* low-mid open woodland over *Acacia citrinoviridis*, *Melaleuca glomerata* tall sparse shrubland over *Eriachne tenuiculmis* mid sparse tussock grassland.

Based on available literature, the presence of *Eucalyptus victrix* as a dominant overstorey species is indicative of a potential use of groundwater, depending on site-based conditions, including depth to groundwater and the surface hydrological regime (FMG, 2018).

The application area has been designed by FMG to avoid and minimise any impacts to vegetation associated with watercourses, however, there will be some clearing of riparian vegetation (FMG, 2018). The riparian vegetation proposed to be cleared have been surveyed and mapped, and are considered typical of the region (FMG, 2018).

Based on the above, the proposed clearing is at variance to this Principle. Potential impacts to vegetation growing in association with the watercourse may be minimised by the implementation of a watercourse management condition.

Methodology FMG (2018)

GIS Database:
- Hydrography, Lakes
- Hydrography, linear

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

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

The application area lies within the Rocklea, Newman and Boolgeeda land systems (GIS Database). These land systems have been mapped and described in technical bulletins produced by the former Department of Agriculture (now the Department of Primary Industries and Regional Development).

The Rocklea land system is described as basalt hills and ridges with steep stony slopes, restricted lower slopes and stony interfluvies supporting hard spinifex, small areas of stony chenopod and short grass forb pastures on stony plains and drainage floors. This land system is not generally susceptible to erosion (Payne et al., 1988).

The Newman Land System consists of rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Payne et al., 1988), this land system is not generally susceptible to erosion. The drainage areas within the application area may have erosional surfaces, however, only a small extent will be cleared and the proposed clearing is for the placement of infrastructure which will be maintained and used to ensure erosion does not have a significant impact (FMG, 2018).

The Boolgeeda System consists of stony plains with hard spinifex grasslands or mulga shrublands. Vegetation is generally not prone to degradation and this land system is not susceptible to erosion (Payne et al., 1988).

The proposed clearing of up to 233.6 hectares of native vegetation within a boundary of approximately 285 hectares, for the purpose of mining related infrastructure is unlikely to cause appreciable land degradation.

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

Methodology FMG (2018)
Payne et al. (1988)

GIS Database:
- Landsystem Rangelands

(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

There are no conservation areas in the vicinity of the application area. The nearest DBCA (formerly DPaW) managed land is Karijini National Park which is located approximately 100 kilometres east of the application area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.

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

Methodology GIS Database:
- DPaW Tenure

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

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

There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). There are no permanent watercourses or wetlands within the area proposed to clear (FMG, 2018; GIS Database).

The application area is located within the Duck Creek catchment, a tributary of the Ashburton River. The streamflow in the ephemeral creeks in the Duck Creek catchment are typically fresh, but highly turbid due to the rapid rise of creek levels in response to rainfall when flooding occurs (FMG, 2018). The proposed clearing is unlikely to result in significant changes to surface water flows.

The groundwater within the application area is between 500 – 1,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). This is considered to be fresh water. It would not be expected that the proposed clearing would cause salinity levels within the application or surrounding area to alter.

Appropriate stormwater, vegetation clearing and materials handling management measures will be put in place to minimise the potential impact on water quality (FMG, 2018). The proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.

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

Methodology FMG (2018)

GIS Database:

- Groundwater Salinity, Statewide
- Hydrography, Linear
- Public Drinking Water Source 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 climate of the region is semi-arid, with an average rainfall of approximately 384 millimetres per year (BOM, 2018). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall (FMG, 2018).

There are no permanent water courses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events due to the natural drainage features of the landscape being largely unaffected (FMG, 2018).

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

Methodology BOM (2018)
FMG (2018)

GIS Database:

- Hydrography, linear

Planning Instrument, Native Title, previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 25 June 2018 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. A submission was received in relation to this application regarding the assessment of potential impacts on the flora, vegetation and fauna from the proposed clearing. A written response was provided on the matters raised, and potential impacts to flora, vegetation and fauna have been addressed under the relevant clearing principles.

The proposed clearing is for the construction of accommodation, roads, aerodrome and water infrastructure, associated with the implementation of the larger Eliwana Iron Ore Mine Project. The minor works will allow essential infrastructure construction and upgrades while the Eliwana Iron Ore Mine Project is under formal assessment under Part IV of the *Environmental Protection Act 1986* (EP Act) by the Environmental Protection Authority (EPA). The Environmental Protection Authority (EPA) have provided consent to the Minor and Preliminary Works for the Eliwana Iron Ore Mine to be undertaken, pursuant to section 41A(3) of the EP Act 1986, on 1 August 2018.

There is one native title claim over the area under application (DPLH, 2018). The mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance within the application area (DPLH, 2018). 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 Water and Environmental Regulation and the Department of Biodiversity Conservation and Attractions, 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 DPLH (2018)

4. References

- Biota (2017) Eliwana Consolidated Detailed Flora and Vegetation Survey. Report prepared for Fortescue Metals Group Ltd, by Biota Environmental Services, 2017.
- BOM (2018) Climate statistics for Australia locations – Hamersley, Bureau of Meteorology.
www.bom.gov.au/climate/averages/tables/cw_005005.shtml (Accessed 17 August 2018).

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DPLH (2018) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. <http://maps.daa.wa.gov.au/AHIS/> (Accessed 17 Month 2018).
- 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.
- Ecoscape (2014) Western Hub Rail Link Level 2 Flora and Vegetation Survey. Report prepared for Fortescue Metals Group Ltd, by Ecoscape (Australia) Pty Ltd, 2014.
- Ecoscape (2015) Eliwana and Flying Fish Level 2 Flora and Vegetation Survey (Phase 2). Report prepared for Fortescue Metals Group Ltd, by Ecoscape (Australia) Pty Ltd, 2015.
- Ecoscape (2017) Eliwana Project: Consolidated Vertebrate Fauna Report. Report prepared for Fortescue Metals Group Ltd, by Ecoscape (Australia) Pty Ltd, 2015.
- FMG (2018) Native Vegetation Clearing Assessment Report – Eliwana Minor Works. Fortescue Metals Group Ltd, Western Australia, 14 June 2018.
- Government of Western Australia (2018) 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Payne, A.L., Mitchell, A.A., and Holman W.F. (1988) An Inventory and Condition Survey of Rangelands in the Ashburton River Catchment, Western Australia. Department of Agriculture, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DBCA	Department of Biodiversity Conservation and Attractions, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DBCA and DWER)
DEE	Department of the Environment and Energy, Australian Government
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
DWER	Department of Water and Environmental Regulation, Western Australia
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (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
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2017) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

T	Threatened species: Published as Specially Protected under the <i>Wildlife Conservation Act 1950</i> , listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).
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Threatened fauna is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the *Wildlife Conservation Act 1950*.

Threatened flora is flora that has been declared to be 'likely to become extinct or is rare, or otherwise in need of special protection', pursuant to section 23F(2) of the *Wildlife Conservation Act 1950*.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

- CR Critically endangered species**
Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EN Endangered species**
Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- VU Vulnerable species**
Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EX Presumed extinct species**
Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.
- IA Migratory birds protected under an international agreement**
Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- CD Conservation dependent fauna**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- OS Other specially protected fauna**
Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P Priority species**
Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
- P1 Priority One - Poorly-known species:**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
- P2 Priority Two - Poorly-known species:**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species

are in urgent need of further survey.

P3

Priority Three - Poorly-known species:

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4

Priority Four - Rare, Near Threatened and other species in need of monitoring:

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.