GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8432/1
Permit Holder:	Fortescue Metals Group Ltd
Duration of Permit:	2 August 2019 – 2 August 2029

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I –CLEARING AUTHORISED

1. Purpose for which clearing may be done
Clearing for the purpose of groundwater investigations.

2. Land on which clearing is to be done
Clearing authorised under this Permit is to be undertaken within land tenure or rights administered under Section 182 of the *Land Administration Act 1997* (WA).

3. Area of Clearing
The Permit Holder must not clear more than 17.7 hectares of native vegetation within the area hatched yellow on attached Plan 8432/1.

4. Period in which clearing is authorised
The Permit Holder shall not clear any native vegetation after 2 August 2024.

5. Application
This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

6. Type of clearing authorised
This Permit authorises the Permit Holder to clear native vegetation for activities to the extent that the Permit Holder has the right to access land under the *Land Administration Act 1997* or any other written law.

PART II –MANAGEMENT CONDITIONS

7. Avoid, minimise and reduce the impacts and extent of clearing
In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:
(a) avoid the clearing of native vegetation;
(b) minimise the amount of native vegetation to be cleared; and
(c) reduce the impact of clearing on any environmental value.

8. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of introduction and spread of *weeds*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
(b) ensure that no *weed*-affected soil, *mulch, fill* or other material is brought into the area to be cleared; and
(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

9. Vegetation management

(a) Where practicable the Permit Holder shall avoid clearing *riparian vegetation;* and

(b) Where a *watercourse* is to be impacted by clearing, the Permit Holder shall maintain the existing surface flow.

10. Flora management

Where *Vittadinia* sp. Coondewanna Flats (Priority 1 flora species) have been identified and its locations provided to the *CEO* and retained on the Department of Water and Environmental Regulation file "DWERVT2562" as "A1775542" the Permit Holder shall ensure that:

(i) no clearing of *Vittadinia* sp. Coondewanna Flats identified under Condition 10 occurs unless first approved by the *CEO*; and
(ii) no clearing occurs within 10 metres of *Vittadinia* sp. Coondewanna Flats identified under Condition 10 occurs unless first approved by the *CEO.*

11. Retain and spread vegetative material and topsoil

The Permit Holder shall:

(a) retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
(b) Within 12 months following completion of clearing authorised under this Permit, *revegetate* and *rehabilitate* the areas that are no longer required for the purpose for which they were cleared under this Permit by:
    (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land; and
    (ii) laying the vegetative material and topsoil retained under Condition 11(a).
(c) Within 4 years of laying the vegetative material and topsoil on the cleared area in accordance to Condition 11(b) of the Permit:
    (i) determine the species composition, structure and density of the area *revegetated* and *rehabilitated;* and
    (ii) where, in the opinion of an *environmental specialist,* the composition structure and density determined under Condition 11(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.

PART III - RECORD KEEPING AND REPORTING

12. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

(a) In relation to the clearing of native vegetation authorised under this Permit:
   (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
   (ii) the date that the area was cleared;
   (iii) the size of the area cleared (in hectares); and
   (iv) purpose for which clearing was undertaken.

(b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to Condition 11 of this Permit:
   (v) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
   (vi) a description of the *revegetation* and *rehabilitation* activities undertaken;
   (vii) the size of the area *revegetated* and *rehabilitated* (in hectares); and
   (viii) the species composition, structure and density of *revegetation* and *rehabilitation*.

13. Reporting

(a) The Permit Holder shall provide a report to the *CEO* by 31 July each year for the life of this permit, demonstrating adherence to all conditions of this permit, and setting out the records required under Condition 12 of this permit in relation to clearing carried out between 1 July and 30 June of the previous financial year.

(b) Prior to 2 May 2029, the Permit Holder must provide to the *CEO* a written report of records required under Condition 12 of this permit where these records have not already been provided under Condition 13(a) of this permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

CEO means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist;

fill means material used to increase the ground level, or fill a hollow;

local provenance means native vegetation seeds and propagating material from natural sources within 200 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;

riparian vegetation has the meaning given to it in Regulation 3 of the Environmental Protection (*Clearing of Native Vegetation*) Regulations 2004;

watercourse has the meaning given to it in section 3 of the *Rights in Water and Irrigation Act 1914*;

weed/s means any plant -

(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
(c) not indigenous to the area concerned.

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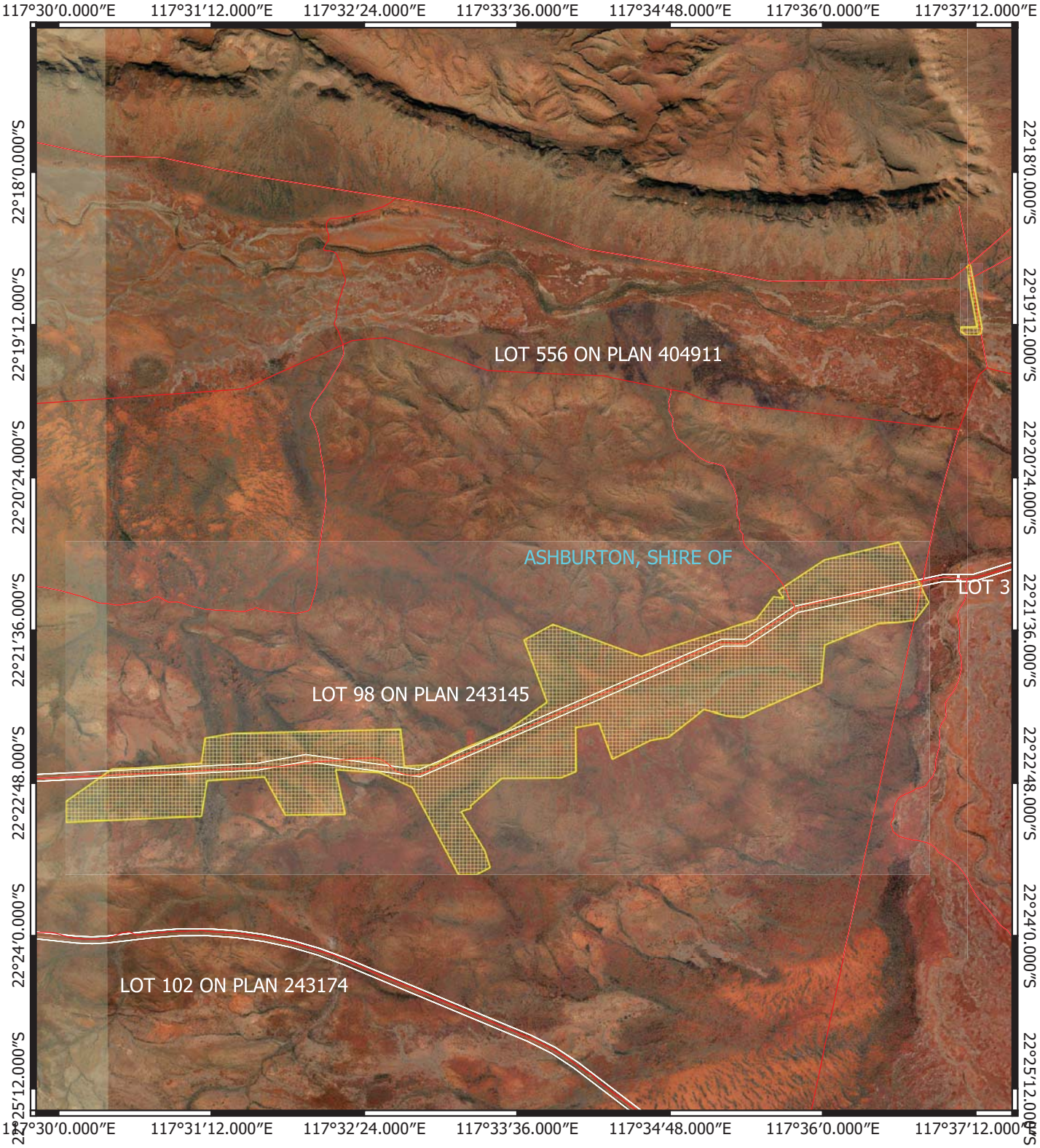
Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

3 July 2019

Plan 8432/1



Legend

CPS layers

- CPS areas approved to clear

base layers

- Road Centrelines
- Cadastre
- Local Government Authorities

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Officer delegated under section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8432/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Fortescue Metals Group Ltd
Application received date: 26 March 2019

1.3. Property details

Property: Section 182 Licence under the *Land Administration Act 1997* (WA)
Local Government Authority: Shire of Ashburton
Localities: Mount Sheila

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
17.7		Mechanical Removal	Groundwater Investigations

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 3 July 2019
Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986*. It has been concluded that the proposed clearing is at variance to clearing principle (f) and is not likely to be, or is not at variance to the remaining clearing principles.

The Delegated Officer also noted the avoidance and minimisation measures proposed by the applicant and the implementation of management conditions in relation to flora, vegetation, revegetation and rehabilitation, and determined that the proposed clearing is not likely to result in unacceptable environmental impacts.

2. Site Information

Clearing Description The application is to clear 17.7 hectares of native vegetation within a boundary of 1,243.7 hectares, within land tenure administered under a Section 182 Licence approval under the *Land Administration Act 1997* in Mount Sheila, for the purpose of groundwater investigations.

Vegetation Description The vegetation of the application area is broadly mapped as the following Beard vegetation associations:
18: *Acacia* open shrubland. Low woodland, mulga (*Acacia aneura*);
29: Mulga ('*Acacia aneura*') sparse low woodland, discontinuous in scattered groups;
82: Snappy Gum (*Eucalyptus leucophloia*) low woodland over *Triodia wiseana* hummock grassland; and
175: Short bunch grassland – savanna/grass plain (Pilbara).

The following flora and vegetation surveys were conducted over a broad area, which included 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).

From the surveys above, the following vegetation associations were recorded within the application area (FMG, 2019a):

AanAprAatTwTe: *Acacia 'aneura', A. pruinocarpa* low open woodland over *Acacia atkinsiana* tall sparse shrubland over *Triodia wiseana, T. epactia* mid hummock grassland;

AanCHf: *Acacia 'aneura'* low open woodland over *Chrysopogon fallax* mid sparse tussock grassland;

AanEgAbTe: *Acacia 'aneura'* isolated trees over *Eucalyptus gamophylla* isolated mallee trees over *A. bivenosa* isolated tall shrubs over *Triodia epactia, T. wiseana* mid closed hummock grassland;

AanExAatAbCHfTe: *Acacia 'aneura', Eucalyptus xerothermica* mid open woodland over *Acacia atkinsiana, A. bivenosa* mid sparse shrubland over *Chrysopogon fallax* mid sparse tussock grassland over *Triodia epactia* mid hummock grassland;

AcAanVfBTe: *Acacia citrinoviridis, Acacia 'aneura'* mid isolated trees over *Vachellia farnesiana* mid sparse shrubland over *Bothriochloa ewartiana, Themeda* sp. Hamersley Station (M.E. Trudgen 11431), *Eriachne benthamii* tall closed hummock grassland;

Ax: *Acacia xiphophylla* open shrubland over mixed Poaceae spp. sparse tussock grassland;

ChApyTHtTe: *Corymbia hamersleyana* low open woodland over *Acacia pyrifolia* and/or *A. tumida* var. *pilbarensis* mid sparse shrubland occasionally over *Gossypium australe* low sparse shrubland over *Themeda triandra* open tussock grassland over *Triodia epactia* mid open hummock;

ElAanAprAbTwTe: *Eucalyptus leucophloia* subsp. *leucophloia* isolated mid trees over *Acacia 'aneura', A. pruinocarpa, A. bivenosa* tall open shrubland over *Triodia wiseana, T. epactia* mid hummock grassland;

ElAanTbr: *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana* scattered tree low sparse woodland over *Acacia 'aneura' A. pruinocarpa, A. bivenosa* tall open shrubland over *Triodia brizoides, T. epactia* mid hummock grassland;

ElAaTw: *Eucalyptus leucophloia* subsp. *leucophloia* low isolated trees over *Acacia ancistrocarpa, A, bivenosa, A. inaequilatera* mid sparse shrubland over *Triodia wiseana* or *T. brizoides* open hummock grassland;

ElAbTw: *Eucalyptus leucophloia* subsp. *leucophloia* and/ or *Corymbia hamersleyana* mid open woodland over *Acacia maitlandii* mid sparse shrubland over *Triodia wiseana* low hummock grassland;

ElChAeTw: *Eucalyptus leucophloia* subsp. *leucophloia* and/ or *Corymbia hamersleyana* low open woodland over *Acacia exigua, A. bivenosa, A. synchronicia* mid open shrubland over *Triodia wiseana* mid hummock grassland;

ElEgAatTw: *Eucalyptus leucophloia* subsp. *leucophloia, Acacia pruinocarpa* isolated low trees over *E. gamophylla* isolated low mallee trees over *Acacia atkinsiana, A. bivenosa, Senna glutinosa* subsp. *glutinosa, S. glutinosa* subsp. *pruinosa* tall sparse shrubland; and

ElHcAhTw: *Eucalyptus leucophloia* subsp. *leucophloia, Corymbia hamersleyana* low open woodland over *Hakea chordophylla* mid sparse shrubland occasionally over *Acacia hilliana, Acacia adoxa* var. *adoxa* low sparse shrubland over *Triodia wiseana* mid hummock grassland.

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive;

to

Good: Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate to it (Keighery, 1994).

The vegetation condition was derived from a consolidated vegetation survey conducted by Biota (2017).

Soil and Landform Type

The application area is mapped as the following land systems (Payne et al., 1988):

- Boolgeeda System, described as stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands or mulga shrublands;
- Newman System, described as rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands;
- Hooley System, described as broad alluvial plains with clay soils and a mosaic of stony nongilgaied and less stony gilgaed surfaces; and
- Rocklea System, described as basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex and occasionally soft spinifex grasslands with scattered shrubs.

The soil groups below occur within the application area (FMG, 2019a):

- Stony soils (203);
- Calcareous shallow loam soils (521);
- Red shallow loam (522);
- Red loamy earth soils (544);

- Self-mulching cracking clay (602); and
- Red/brown non-cracking clays (622).

3. Minimisation and mitigation measures

The applicant has applied to clear up to 17.7 hectares within a boundary of 1,243.7 hectares, which was reduced from 1,349.91 hectares. The applicant has committed to avoiding known locations of priority flora species within the application area, and the implementation of a flora management condition will assist in managing potential impacts to priority flora species. A vegetation management condition has been implemented to manage potential impacts to watercourses and riparian vegetation.

4. Assessment of application against clearing principles

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

Proposed clearing is not likely to be at variance to this principle

The application area is located within the Hamersley subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Pilbara Bioregion. The Hamersley subregion is described as a mountainous area of Proterozoic sedimentary ranges and plateaus dissected by gorges (CALM, 2002).

The application area does not intersect any Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs) or known locations of Threatened flora.

The vegetation within the application area is considered to be in 'Excellent' to 'Good' condition (FMG, 2019a). The application area and its surroundings have been subject to numerous flora and vegetation surveys encompassing 134,177 hectares (FMG, 2019a). The Eliwana Rail Survey study area comprised 61,797 hectares as part of a consolidated survey (Biota, 2017), this survey recorded 651 flora taxa from 204 genera, of which seven were introduced species. The high level of species richness is due to the survey area covering a broad, extensive area and the application area is expected to be lower in comparison.

One Priority 1 flora species, *Vittadinia* sp. Coondewanna Flats, was recorded within the application area (FMG, 2019a). This species is known from 18 records from Ashburton and East Pilbara areas, at sites generally associated with plains with silty or sandy clay loam (Western Australian Herbarium, 1988-). Potential impacts to this species as a result of the proposed clearing may be minimised by the implementation of a flora management condition. Three Priority 3 flora species were also recorded within the application area, and the applicant advised that one of the species, *Rhagodia* sp. Hamersley, will require disturbance (FMG, 2019c). This species is known from 63 records from Ashburton, East Pilbara and Meekatharra areas (Western Australian Herbarium, 1988-), as well as 490 recorded locations in FMG's database (FMG, 2019c). Due to the number of records, it is not likely that the proposed clearing will have a significant impact to the conservation of this species.

A consolidated Level 2 terrestrial fauna assessment of the Eliwana Iron Ore Railway Project, covering and surrounding the application area, was conducted by Ecoscape (2017). The assessment involved consulting 41 previous fauna survey reports to develop the Eliwana Project Consolidated Vertebrate Fauna Survey assessment. Three broad fauna habitat types were mapped by Ecoscape (2017) which intersect the application area: 'Lower slopes/Hillslopes', 'Plain (Shrubland)' and 'Plain (Stony/Gibber)'. No conservation significant fauna species have been recorded within the application area, with the exception of *Merops ornatus* (Rainbow Bee-eater).

The vegetation associations and fauna habitats within the application area are considered to be typical of the landscape (FMG, 2019a), indicating that the application area is not more biodiverse in comparison to other locations within the bioregion.

There are seven weed species recorded from within a five kilometre radius of the application area (FMG, 2019a), none of which are weeds of National Significance (WONS) or Declared Plants under the *Biodiversity 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.

The proposed clearing of 17.7 hectares of native vegetation within a boundary of 1,243.7 hectares, is unlikely to result in significant impacts to the biological diversity of the local area or region.

Given the above, the application area is not considered to comprise a high level of biological diversity.

The proposed clearing is not likely to be at variance to this principle.

(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.

Proposed clearing is not likely to be at variance to this principle

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

- Lower slopes/Hillslopes;
- Plain (Shrubland); and
- Plain (Stony/Gibber).

The 'Lower slopes/Hillslopes' habitat consists of rolling hills, footslopes of hills with a hard rocky substrate. The tree strata within this habitat comprises *Eucalyptus leucophloia, Acacia* over a shrub layer or *Senna* and a spinifex hummock grassland. This habitat is likely to support the Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4) (FMG, 2019a).

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, 2019a).

The 'Plain (Stony/Gibber)' habitat is relatively flat, slightly undulating plain with open shrubland of *Acacia* and *Senna* over a spinifex hummock grassland. This habitat is also characterised by substrate of bedrock with scattered pebbles and stones. This habitat is likely to be used by the Grey Falcon and the Peregrine Falcon for foraging and support the Western Pebble-mound Mouse (FMG, 2019a).

Fauna surveys undertaken within the application area have not recorded any conservation significant species, with the exception of *Merops ornatus* (Rainbow Bee-eater) (FMG, 2019a). Given the mobile nature of birds, they can easily disperse in the surrounding environment and is not likely to be impacted by the proposed clearing.

While local fauna species may utilise the application area, the proposed clearing of 17.7 hectares is unlikely to significantly impact local fauna species, including conservation significant species. Extensive amounts of vegetation remains in the local area and region, and the fauna habitats recorded within the application area are common and widespread throughout the local area. The native vegetation within the application area is not likely to be a part of, or necessary for the maintenance of a significant habitat for fauna.

Given the above, the proposed clearing is not likely to be at variance to this principle.

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

Proposed clearing is not likely to be at variance to this principle

There are no known records of Threatened flora within the application area. Flora surveys of the application area did not record any species of Threatened flora (FMG, 2019a). Given that the vegetation associations within the application area are widespread within the region, the native vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened flora.

The proposed clearing is not likely to be at variance to this principle.

(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.

Proposed clearing is not likely to be at variance to this principle

The '*Themeda* grasslands on cracking clays (Hamersley Station, Pilbara)' TEC is located in close proximity to the application area, directly adjacent to the eastern edge of the application area. The proposed clearing will be limited to the application area and an existing track will be utilised to access the area adjacent to the TEC, avoiding disturbance to the TEC.

The application area is not likely to comprise the whole or part of, or be necessary for the maintenance of a TEC.

Given the above, the proposed clearing is not likely to be at variance to this principle.

(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.

Proposed clearing is not at variance to this principle

The application area falls within the Pilbara IBRA Bioregion. Approximately 99% of the pre-European vegetation still exists in the Pilbara IBRA Bioregion. The application area is broadly mapped as Beard vegetation associations 18: *Acacia* open shrubland. Low woodland, mulga (*Acacia aneura*), 29: Mulga ('*Acacia aneura*') sparse low woodland, discontinuous in scattered groups; 82: Snappy Gum (*Eucalyptus leucophloia*) low woodland over *Triodia wiseana* hummock grassland; and 175: Short bunch grassland – savanna/grass plain (Pilbara).

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). 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.

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

Table 1: Vegetation extents (Government of Western Australia, 2018)

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Current Extent in DBCA Managed Lands	
				(ha)	(%)
IBRA Bioregion					
Pilbara	17,808,657.04	17,731,764.88	99.57	1,802,372.56	10.16
Beard vegetation associations - WA					
18	19,892,306.46	19.843,148.07	99.75	1,317,179.00	6.64
29	7,903,991.45	7,898,973.24	99.94	496,367.56	6.28

82	2,565,901.28	2,553,206.19	99.51	295,377.96	11.57
175	526,957.95	524,640.18	99.56	40,277.79	7.68
Beard vegetation associations – Pilbara Bioregion					
18	676,556.72	671,843.35	99.30	170,297.48	25.35
29	1,133,219.76	1,131,712.01	99.87	106,259.86	9.39
82	2,563,583.23	2,550,888.14	99.50	295,377.96	11.58
175	507,860.16	507,466.80	99.92	40,277.79	7.94

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

Proposed clearing is at variance to this principle

There are several minor non-perennial watercourses mapped within the application area, as well as the non-perennial Barnett Creek and a tributary of Caves Creek. These watercourses flow only after heavy rainfall and are dry for most of the year. The application area has been designed to avoid and minimise any impacts to vegetation associated with watercourses, however, there will be some minor clearing of riparian vegetation. The riparian vegetation proposed to be cleared have been surveyed and mapped, and are considered typical of the region (FMG, 2019a).

Given the above, the proposed clearing is at variance to this principle. Potential impacts to watercourses and riparian vegetation as a result of the proposed clearing may be minimised by the implementation of a vegetation/watercourse management condition.

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

Proposed clearing is not likely to be at variance to this principle

The application area is mapped within the Boolgeeda, Newman, Hooley and Rocklea land systems. 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 Hooley System is described as broad alluvial plains with clay soils and a mosaic of stony non-gilgaied and less stony gilgaed surfaces. This land system is prone to degradation if overgrazed, and parts of the system that are not protected by a stony mantle are moderately susceptible to soil erosion (Payne et al., 1988). This land system is mapped within the small portion of the application area in the north east, the proposed clearing boundary encompasses 1,243.7 hectares of which 4.3% is made up of the Hooley System. The proposed clearing is for the placement of infrastructure for groundwater investigations (tracks and drill pads), which will be maintained by the applicant to ensure erosion does not have a significant impact to the environment (FMG, 2019a). Additionally, the implementation of a revegetation and rehabilitation condition will assist in the management of potential impacts to land potentially at risk of erosion.

The Boolgeeda, Newman and Rocklea systems are not generally susceptible to erosion (Payne et al., 1988).

Given the above, the proposed clearing is not likely to be at variance to this principle.

(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.

Proposed clearing is not likely to be at variance to this principle

According to available databases, the nearest conservation area is Karijini National Park, which is approximately 34 kilometres east of the application area. Noting the distance to the nature reserve and the size of the proposed clearing, the proposed clearing is unlikely to impact on the environmental values of the conservation area.

Given the above, the proposed clearing is not likely to be at variance to this principle.

(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.

Proposed clearing is not likely to be at variance to this principle

According to available databases, the groundwater within the application area is between 500 – 1,000 milligrams per litre of Total Dissolved Solids (TDS), and is considered to be freshwater. It would not be expected that the proposed clearing would cause salinity levels within the application or surrounding area to alter. The proposed clearing of up to 17.7 hectares within a boundary of 1,243.7 hectares, in an area where extensive amounts of vegetation remains, is unlikely to deteriorate the quality of groundwater.

As assessed under principle (f), watercourses that intersect the application area are ephemeral and only flow after significant rainfall events. Given the relatively small size of the proposed clearing within a semi-arid climate, the proposed clearing is unlikely to deteriorate the quality of surface water.

Given the above, the proposed clearing is not likely to be at variance to this clearing principle.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing 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 and evaporation far exceeding rainfall (BoM, 2019). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall. The proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding events due to the limited disturbance to the natural drainage of water in the landscape from the proposed clearing.

Given the above, the proposed clearing is not likely to be at variance to this principle.

Planning instruments and other relevant matters.

On 12 April 2019, a Delegated Officer of the Department of Water and Environmental Regulation (DWER) wrote to the Wintawari Guruma Aboriginal Corporation (the Prescribed Body Corporate for the determined Eastern Guruma native title claim (WD6208/98)), providing notice as required by the *Native Title Act 1993,* and providing an opportunity to comment on the application. No comments were received in relation to this application. It is understood that the applicant and the Wintawari Guruma Aboriginal Corporation have entered into Land Access Agreements on 15 December 2009 (FMG, 2019a).

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the DWER website on 15 April 2019 with a 21 day submission period. No submissions were received in relation to this application. The applicant amended the application area on 23 April 2019, reducing the boundary of the application area from 1,349.31 hectares to 1,243.7 hectares to remove an area of significance to Traditional Owners (FMG, 2019b).

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

5. References

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