

Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	10212/1
Permit type:	Purpose Permit
Applicant name:	Fortescue Ltd
Application received:	26 May 2023
Application area:	21.24 hectares
Purpose of clearing:	Mineral Exploration
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 45/1226
Location (LGA area/s):	Shire of East Pilbara
Colloquial name:	West Star Drilling Programme

1.2. Description of clearing activities

Fortescue Ltd proposes to clear up to 21.24 hectares of native vegetation within a boundary of approximately 1,309 hectares, for the purpose of mineral exploration. The project is located approximately 96 kilometres southeast of Port Hedland, within the Shire of East Pilbara.

The application is to allow for mineral exploration drilling and associated track construction (FMG, 2023d).

The West Star prospect is part of the larger Iron Bridge Magnetite Project, with mining and extraction currently occurring at the neighbouring North Star and Eastern Limb deposits (FMG, 2023d). The West Star Drilling Programme aims to extend and evaluate the area for large magnetite iron ore resources to add to the resource value of Iron Bridge (FMG, 2023d).

The West Star Drilling Programme consists of reverse circulation (RC) and diamond (DD) drilling, and associated pad and track construction (FMG, 2023d). The RC drilling involves 170 holes on pads 20 metres wide and 25 metres long, and the DD drilling involves 10 holes on pads 20 metres wide and 30 metres long (FMG, 2023d). The construction of 33.8 kilometres of access tracks and drill lines, with an average width of 4.5 metres are required to allow light vehicles (LVs), earthworks machinery, and drill rigs to safely access the exploration programme (FMG, 2023d). The exploration programme will be conducted in stages, with the first stage expected to include the clearing of 5 drill pads and associated tracks (FMG, 2023d). Depending on results, more drilling will be conducted to further define the resource (FMG, 2023d).

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	4 January 2024
Decision area:	21.24 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) on 26 May 2023. DEMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix F), additional supporting information provided by the applicant (Appendix A), including the results of biological surveys, the clearing principles set out in Schedule 5 of the EP Act (Appendix C), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- potential impacts to conservation significant flora;
- the loss of native vegetation that is suitable habitat for conservation significant fauna; and
- potential impacts to riparian vegetation.

After consideration of the available information, the applicant's minimisation and mitigation measures (Section 3.1), and the purpose of clearing for mineral exploration, the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- avoid clearing riparian vegetation where practicable and where a watercourse or drainage line is to be impacted, ensure that existing surface flow is maintained or reinstated downstream into natural drainage lines; and
- no clearing authorised within significant rocky escarpment fauna habitat.

2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)

Relevant agreements (treaties) considered during the assessment include:

- Japan-Australia Migratory Bird Agreement
- China-Australia Migratory Bird Agreement
- Republic of Korea-Australia Migratory Bird Agreement

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant provided the following avoidance and mitigation measures (FMG, 2023d):

- The indicative disturbance footprint is the maximum proposed disturbance for this programme; however, the drilling will be conducted in stages. Only the minimum required pads will be constructed at each stage, as the programme develops;
- The number and size of the proposed pads and tracks to be constructed have been minimised, where practicable, to reduce the impact to native vegetation;
- All clearing will be undertaken in accordance with FMG's internal Exploration Environmental Management Plan;
- Measures to conserve conservation significant flora species will include conducting the clearing in accordance with a permit issued under FMG's internal Land Use Certification Procedure;
- *Quoya zonalis* plants that may be impacted will be flagged in the field, and will not be disturbed; and
- A Section 40 Authorisation issued under the *Biodiversity Conservation Act 2016* for any inadvertent impacts will be obtained before any works commence.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora, and vegetation). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (flora and fauna) - Clearing Principles (a), (b), and (c)

Assessment

FLORA

A number of flora and vegetation surveys have been conducted over the application area and surrounds (Ecologia, 2012c; 2012d; 2016; 2022; 2023; Spectrum, 2020; 2021). One threatened flora species was recorded during these surveys: *Quoya zonalis* (EN, previously named *Pityrodia* sp. Marble Bar). Across all surveys approximately 14,000 *Quoya zonalis* individuals were recorded (Ecologia, 2012c; 2012d; 2016; 2022; 2023; Spectrum, 2020; 2021).

The area proposed to be cleared contains approximately 1,561 *Quoya zonalis* individuals (Ecologia, 2012c; 2012d; 2016; 2022; 2023; Spectrum, 2020; 2021). FMG (2023d) have committed to avoiding all recorded individuals of *Quoya zonalis*, however there may be inadvertent impacts to these plants as a result of the proposed works (DBCA, 2023).

Currently FMG (2023b) have no definitive locations of tracks and drill pads, however their current outline for their 2024 works (subject to change) intersect the 50 metre buffer of approximately 436 *Quoya zonalis* individuals. The proposed clearing within 50 metres of 436 individuals is unlikely to significantly impact the conservation status of this species if inadvertent impacts were to occur (DBCA, 2023). In addition, FMG (2023d) are seeking an approval under Section 40 of the *Biodiversity Conservation Act 2016*, for unintentional take as a result of indirect impacts from their exploration activities. The Authorisation will likely be subject to the following conditions that will need to be adhered to (DBCA, 2023):

- hygiene measures to reduce the introduction and spread of weeds and disease;
- flagging all individuals of *Quoya zonalis* within the 50 metre buffer zone for avoidance; and
- a qualified botanist should be onsite to ensure works are undertaken appropriately to avoid all threatened flora.

FMG (2023d) also have their own management measures they will implement in addition to a Section 40 Authorisation to minimise impacts on and protect conservation significant flora and vegetation (Table 1 in Appendix E).

Ptilotus mollis (P4) and *Triodia basitricha* (P3) were also recorded within the application area by Ecologia (2023). The survey covered approximately 7,869.2 hectares, of which 675.7 hectares intersects the application area (Ecologia, 2023).

Ptilotus mollis was recorded at 46 coordinate points, with Ecologia (2023) counting individual plants at 41 points and estimating abundance at five. The total abundance of plants recorded (counts and estimates) is 1,190, with 264 plants occurring within the application area.

Triodia basitricha was recorded at 304 coordinate points, with Ecologia (2023) counting individual plants at six points and estimating abundance at 298. The total abundance of plants recorded (counts and estimates) is 215,555, with 32,400 plants occurring within the application area.

Ptilotus mollis and *Triodia basitricha* are known from approximately 22 locations each, with the Ecologia (2023) survey representing one of their known locations (WAH, 1998-). The proposed clearing for tracks and drill pads in 2024 is expected to have no to very little impact on these species, however future works may directly impact individuals (FMG, 2023b). Direct impacts to either of these species from future works is unlikely to significantly impact the extent of their local populations, given the abundance of individuals recorded outside the application area (Ecologia, 2023; FMG, 2023b; WAH, 1998-). Both species have similar habitat requirements of rocky hills, ridges, and gravelly slopes, which are common throughout the Pilbara bioregion (WAH, 1998-; GIS Database). It can be assumed that both species extend beyond the Ecologia (2023) survey area, given uniformity of the rocky hills and ridges in the immediate surrounds, resulting in potential impacts to these species to likely be less extensive (GIS Database).

FAUNA

A fauna survey was conducted over the application area and surrounds by Ecologia Environment in March, April, July, October, and November 2011, for a total of 54 days covering approximately 34,845.2 hectares (Ecologia, 2012a; 2012b). The survey identified two fauna habitats within the application area:

HABITAT TYPE	DESCRIPTION	Area (ha)	Area (%)
Hills, ranges, plateaus	Open vegetation structure with low sparse <i>Eucalyptus</i> and shrubland of <i>Acacia</i> species, <i>Senna</i> species, and <i>Solanum lasiophyllum</i> over tussock grassland of <i>Triodia</i> species	1286.94	98.3
Rocky escarpments (ridges, mesa, cliffs, outcrops, breakaways)	Cliff faces along rocky ridges and breakaways with numerous vertical and horizontal crevices and rocky gorges with semi-permanent waterholes	22.07	1.7

The rocky escarpment habitat is considered critical habitat for northern quoll (*Dasyurus hallucatus*, EN), Pilbara leaf-nosed bat (*Rhinonictis aurantia* (Pilbara form), VU), and Pilbara olive python (*Liasis olivaceus barroni*, VU) where this habitat coincides with permanent or long-term water pools (Ecologia, 2012a; 2012b; FMG, 2023d).

Ecologia (2012a; 2012b) recorded northern quoll and long-tailed dunnart (*Sminthopsis longicaudata*, P4) within the application area. The survey also recorded Pilbara olive python; however, where this species was recorded has been excised from the application area in addition to other water holes (Ecologia, 2012a). Ghost bat (*Macroderma gigas*, VU) and western pebble-mound mouse (*Pseudomys chapmani*, P4) were recorded during the Ecologia (2012a; 2012b) survey, however these records were outside the application area. Further fauna monitoring undertaken also recorded northern quoll, Pilbara leaf-nosed bat, and Pilbara olive python within the application area (FMG, 2016; 2023a; 2023d).

Northern quoll was recorded within the rocky escarpment and nearby drainage habitats throughout the broader survey area, with at least 20 confirmed individuals as part of the population (Ecologia, 2012a; FMG, 2016; 2023b). There is a significant rocky escarpment that extends into the eastern boundary of the application area where northern quolls have been recorded through trapping and motion camera (Ecologia, 2023a; FMG, 2016; 2023a; 2023d). This habitat was assessed and determined to be suitable denning habitat (Ecologia, 2012b).

Pilbara olive python was recorded between the excised water hole and rocky escarpment habitat during further fauna monitoring, indicating that the vegetation likely offers significant habitat connectivity (Ecologia, 2023a; FMG, 2023a).

Ecologia (2012a, 2012b) recorded four Pilbara leaf-nosed bat roosts two to five kilometres south of the application area. Pilbara leaf-nosed bat typically forages up to 20 kilometres from their roosts (Bat Call WA, 2021). Ecologia (2012a) recorded Pilbara leaf-nosed bat around rocky escarpment and drainage line habitats throughout the broader survey area, indicating the species utilises these areas for foraging.

Long-tailed dunnart and western pebble-mound mouse would primarily utilise hills, ranges, plateaus habitat within the application area, which was mapped extensively (Ecologia, 2012a; 2012b). The hills, ranges, plateaus habitat was also mapped extensively within the broader survey area (68.4% of the survey area), and is common throughout the Pilbara region (Ecologia, 2012a).

Given the rocky escarpment habitat along the eastern edge of the application area provides critical habitat for a number of conservation significant fauna species, a restricted clearing condition with a 200 metre buffer is recommended. The 200 metre buffer will allow the vegetation between Fig Pool and the rocky escarpment to be retained for habitat connectivity for species that may utilise this water source.

Conclusion

Based on the above assessment, the proposed clearing may result in a loss of conservation significant flora and habitat for conservation significant fauna.

For the reasons set out above, it is considered that the impacts of the proposed clearing on *Quoya zonalis*, *Ptilotus mollis*, *Triodia basitricha* can be managed through the standard avoid and minimise condition. Potential impacts to *Quoya zonalis* will be managed with a Section 40 authorisation under the BC Act, and the proposed clearing is unlikely to significantly reduce the extent of *Ptilotus mollis* or *Triodia basitricha*.

Impacts to habitat for conservation significant fauna can be managed by a restricted clearing condition, to maintain primary habitat for a number of fauna species. In addition, a slow, one-directional clearing condition will also allow terrestrial fauna in the area to move to adjacent habitats.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- a restricted clearing condition around significant rocky escarpment habitat for fauna; and
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 16 June 2023 by the Department of Energy, Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WCD2019/010) over the area under application (DPLH, 2023). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, 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, 2023). 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.

Other relevant authorisations required for the proposed land use include:

- A Programme of Work approved under the *Mining Act 1978*.
- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

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.

It is noted that the proposed clearing may impact on northern quolls (*Dasyurus hallucatus*, EN), which is a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Climate Change, Energy, the Environment and Water, Australian Government for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of Climate Change, Energy, the Environment and Water for further information regarding notification and referral responsibilities under the EPBC Act.

End

Appendix A. Additional information provided by applicant

Information requested	Applicant response
Requested spatial data of all <i>Quoya zonalis</i> recorded within the application area.	Provided.
Requested survey reports and IBSA numbers of surveys that were conducted after the submission of the application.	Provided.
Requested spatial data of fauna monitoring mentioned in supporting documentation (FMG, 2023d).	Provided.
Requested spatial data of proposed tracks and drill pad locations.	Provided, however spatial data was FMG's indicative 2024 plans.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details																						
Local context	<p>The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia (GIS Database). It is surrounded by large areas of uncleared land and mining operations within the Chichester subregion of the Pilbara bioregion (GIS Database).</p> <p>Approximately 99.9% of the local area (50 kilometre radius from the centre of the area proposed to be cleared) remains uncleared (GIS Database).</p>																						
Ecological linkage	The application area is not considered a significant ecological linkage. The vegetation immediately surrounding the application area and the majority of the region remains uncleared (GIS Database).																						
Conservation areas	The application area is not located within any conservation areas (GIS Database). The nearest conservation area is Mungaroon Range Nature Reserve, located approximately 68.4 kilometres southwest of the application area (GIS Database).																						
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation association (GIS Database): 82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i>.</p> <p>A flora and vegetation survey was conducted over the application area and surrounds by Ecologia Environment during April 2011. The following vegetation types were recorded within the application area (Ecologia, 2012c):</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>AaTw1</td> <td><i>Grevillea wickhamii</i>, <i>Acacia acradenia</i> and <i>Acacia orthocarpa</i> sparse mid shrubland over <i>Triodia wiseana</i> sparse hummock grassland over <i>Dampiera candidans</i> isolated herbs</td> </tr> <tr> <td>AaTw2</td> <td><i>Acacia acradenia</i> open mid shrubland over <i>Triodia wiseana</i> hummock grassland</td> </tr> <tr> <td>AaTw3</td> <td><i>Acacia tumida</i> and <i>Grevillea wickhamii</i> sparse tall shrubland over <i>Acacia acradenia</i> open mid shrubland over <i>Triodia wiseana</i> hummock grassland</td> </tr> <tr> <td>AaTw4</td> <td><i>Acacia acradenia</i> and <i>Acacia inaequilatera</i> sparse mid shrubland over <i>Triodia wiseana</i> and <i>Triodia lanigera</i> hummock grassland</td> </tr> <tr> <td>AiTb</td> <td><i>Acacia inaequilatera</i> and <i>Grevillea wickhamii</i> sparse tall shrubland over <i>Acacia acradenia</i> sparse mid shrubland over <i>Triodia basedowii</i> and <i>Triodia wiseana</i> hummock grassland</td> </tr> <tr> <td>AoTw</td> <td><i>Acacia orthocarpa</i> open tall shrubland over <i>Triodia wiseana</i> open hummock grassland and <i>Eriachne pulchella</i> isolated tussock grasses</td> </tr> <tr> <td>ApTp</td> <td><i>Acacia pyrifolia</i>, <i>Acacia acradenia</i>, <i>Tephrosia rosea</i> and <i>Indigofera monophylla</i> mid shrubland, over <i>Triodia pungens</i> open hummock grassland</td> </tr> <tr> <td>AtTw</td> <td><i>Acacia tumida</i> and <i>Grevillea wickhamii</i> open tall shrubland over <i>Triodia wiseana</i> open hummock grassland</td> </tr> <tr> <td>EIApTw</td> <td><i>Eucalyptus leucophloia</i> isolated trees over <i>Acacia ptychophylla</i> sparse shrubland over <i>Triodia wiseana</i> open hummock grassland over <i>Dampiera candidans</i> and <i>Polycarpaea holtzei</i> isolated herbs</td> </tr> <tr> <td>FpAtCo</td> <td><i>Ficus platypoda</i> open woodland over <i>Acacia tumida</i> and <i>Gossypium robinsonii</i> sparse tall shrubland over <i>Cymbopogon obtectus</i> and <i>Eriachne mucronata</i> sparse tussock grassland and <i>Cyperus hesperius</i> isolated sedges</td> </tr> </tbody> </table>	Code	Description	AaTw1	<i>Grevillea wickhamii</i> , <i>Acacia acradenia</i> and <i>Acacia orthocarpa</i> sparse mid shrubland over <i>Triodia wiseana</i> sparse hummock grassland over <i>Dampiera candidans</i> isolated herbs	AaTw2	<i>Acacia acradenia</i> open mid shrubland over <i>Triodia wiseana</i> hummock grassland	AaTw3	<i>Acacia tumida</i> and <i>Grevillea wickhamii</i> sparse tall shrubland over <i>Acacia acradenia</i> open mid shrubland over <i>Triodia wiseana</i> hummock grassland	AaTw4	<i>Acacia acradenia</i> and <i>Acacia inaequilatera</i> sparse mid shrubland over <i>Triodia wiseana</i> and <i>Triodia lanigera</i> hummock grassland	AiTb	<i>Acacia inaequilatera</i> and <i>Grevillea wickhamii</i> sparse tall shrubland over <i>Acacia acradenia</i> sparse mid shrubland over <i>Triodia basedowii</i> and <i>Triodia wiseana</i> hummock grassland	AoTw	<i>Acacia orthocarpa</i> open tall shrubland over <i>Triodia wiseana</i> open hummock grassland and <i>Eriachne pulchella</i> isolated tussock grasses	ApTp	<i>Acacia pyrifolia</i> , <i>Acacia acradenia</i> , <i>Tephrosia rosea</i> and <i>Indigofera monophylla</i> mid shrubland, over <i>Triodia pungens</i> open hummock grassland	AtTw	<i>Acacia tumida</i> and <i>Grevillea wickhamii</i> open tall shrubland over <i>Triodia wiseana</i> open hummock grassland	EIApTw	<i>Eucalyptus leucophloia</i> isolated trees over <i>Acacia ptychophylla</i> sparse shrubland over <i>Triodia wiseana</i> open hummock grassland over <i>Dampiera candidans</i> and <i>Polycarpaea holtzei</i> isolated herbs	FpAtCo	<i>Ficus platypoda</i> open woodland over <i>Acacia tumida</i> and <i>Gossypium robinsonii</i> sparse tall shrubland over <i>Cymbopogon obtectus</i> and <i>Eriachne mucronata</i> sparse tussock grassland and <i>Cyperus hesperius</i> isolated sedges
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Characteristic	Details						
	<p>SpT1 <i>Solanum phlomoides</i> isolated low shrubs over <i>Triodia lanigera</i> open hummock grassland</p> <hr/> <p>Tw1 <i>Triodia wiseana</i> and <i>Triodia schinzii</i> hummock grassland and <i>Eriachne mucronata</i> isolated hummock grasses</p> <hr/> <p>Tw4 <i>Triodia wiseana</i> hummock grassland</p> <hr/>						
Vegetation condition	<p>The vegetation of the application area is in the following conditions (Ecologia, 2012c; Trudgen, 1991):</p> <p>Excellent Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.</p> <p>Very good Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.</p> <p>The full Trudgen (1991) condition rating scale is provided in Appendix D.</p>						
Climate and landform	<p>The application area is mapped within elevations of 300-400 metres AHD (GIS Database). The climate of the Chichester subregion is semi-desert-tropical, with the nearest weather station recording an average rainfall of approximately 384.9 millimetres per year (BoM, 2023; CALM, 2002).</p>						
Soil description and land degradation risk	<p>The soils and landforms within the application area are mapped as (DPIRD, 2023; Van Vreeswyk et al., 2004; GIS Database):</p> <table border="1"> <thead> <tr> <th>LAND SYSTEM</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>CAPRICORN</td> <td> <p>Landform: erosional surfaces; hills, ridges and plateaux remnants on basalt with steep stony slopes, restricted lower slopes, stony interfluvies and minor gilgai plains; moderately spaced tributary drainage patterns of small channels in shallow valleys in upper part</p> <p>Soils: stony soil</p> </td> </tr> <tr> <td>ROCKLEA</td> <td> <p>Landform: erosional surfaces; ranges and hills with steep rocky upper slopes, more gently sloping stony footslopes, restricted stony lower plains and valleys; moderately spaced tributary drainage patterns</p> <p>Soils: stony soil, red shallow loam, hard cracking clay, red/brown non-cracking clay</p> </td> </tr> </tbody> </table> <p>Both land systems are generally resistant to erosion (Van Vreeswyk et al., 2004).</p>	LAND SYSTEM	DESCRIPTION	CAPRICORN	<p>Landform: erosional surfaces; hills, ridges and plateaux remnants on basalt with steep stony slopes, restricted lower slopes, stony interfluvies and minor gilgai plains; moderately spaced tributary drainage patterns of small channels in shallow valleys in upper part</p> <p>Soils: stony soil</p>	ROCKLEA	<p>Landform: erosional surfaces; ranges and hills with steep rocky upper slopes, more gently sloping stony footslopes, restricted stony lower plains and valleys; moderately spaced tributary drainage patterns</p> <p>Soils: stony soil, red shallow loam, hard cracking clay, red/brown non-cracking clay</p>
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CAPRICORN	<p>Landform: erosional surfaces; hills, ridges and plateaux remnants on basalt with steep stony slopes, restricted lower slopes, stony interfluvies and minor gilgai plains; moderately spaced tributary drainage patterns of small channels in shallow valleys in upper part</p> <p>Soils: stony soil</p>						
ROCKLEA	<p>Landform: erosional surfaces; ranges and hills with steep rocky upper slopes, more gently sloping stony footslopes, restricted stony lower plains and valleys; moderately spaced tributary drainage patterns</p> <p>Soils: stony soil, red shallow loam, hard cracking clay, red/brown non-cracking clay</p>						
Waterbodies	<p>The desktop assessment indicated that no permanent waterbodies are located within the application area (GIS Database). Several minor non-perennial drainage lines intersect the application area (GIS Database).</p>						
Hydrogeography	<p>The application area is located within the Pilbara Surface Water Area and Pilbara Groundwater Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (GIS Database).</p> <p>The mapped groundwater salinity is 500-1000 total dissolved solids milligrams per litre, which is described as marginal water quality (GIS Database).</p>						
Flora	<p>There are records of 24 priority and one threatened flora species within 50 kilometres of the application area (Appendix B.3; GIS Database).</p>						
Ecological communities	<p>There are no known threatened or priority ecological communities mapped within the application area (GIS Database). The nearest known ecological community is the Gregory Land System priority ecological community (P3), located approximately 46.5 kilometres northwest of the application area (GIS Database).</p>						
Fauna	<p>There are records of 20 fauna species of conservation significance within 50 kilometres of the application area (Appendix B.4; GIS Database). Six of these species are migratory birds which are not considered under this assessment due to no suitable habitat available within the application area (GIS Database).</p>						

B.2. Vegetation extent

	Pre-European area (ha)	Current extent (ha)	Extent Remaining %	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA Managed Lands
IBRA Bioregion - Pilbara	17,808,657	17,731,764	~99	1,801,714	10.12
Beard vegetation associations - State					
82	2,565,901	2,553,206	~99	295,377	11.51
Beard vegetation associations - Pilbara bioregion					
82	2,563,583	2,550,888	~99	295,377	11.52

Government of Western Australia (2019)

B.3. Flora analysis table

The following conservation significant flora species have records within a 50 kilometre radius of the application area (GIS Database). Habitat suitability and likelihood of occurrence was determined utilising biological survey information (Ecologia, 2012c; 2012d; 2016; 2022; 2023; FMG, 2023d; Spectrum, 2020; 2021; WAH, 1998-; GIS Database).

Species name	Conservation status	Distance of closest record to application area (km)	Suitable habitat? [Y/N; further information]	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia leeuweniana</i>	1	22.8	N	29	Y
<i>Acacia levata</i>	3	33	N	25	Y
<i>Bulbostylis burbidgeae</i>	4	23.2	N	38	Y
<i>Corchorus</i> sp. Yarrie	1	47.5	Suitable habitat present; no records within 40 km of the application area despite multiple targeted surveys	6	Y
<i>Dolichocarpa</i> sp. Hamersley Station	3	35.4	N	38	Y
<i>Eragrostis crateriformis</i>	3	14.5	Suitable habitat possibly present. Records within 15 km of application area	55	Y
<i>Euphorbia clementii</i>	3	8.5	Suitable habitat possibly present. Records within 15 km of application area	38	Y
<i>Euphorbia inappendiculata</i> var. <i>inappendiculata</i>	2	35.4	N	13	Y
<i>Euploca argyrea</i>	1	41.1	N	1	Y
<i>Euploca mutica</i>	3	21.1	N	76	Y
<i>Gomphrena leptophylla</i>	3	24.9	Suitable habitat possibly present; no records within 20 km of the application area despite several targeted surveys	8	Y
<i>Gymnanthera cunninghamii</i>	3	22.2	N	47	Y
<i>Heliotropium murinum</i>	3	37.1	N	15	Y
<i>Josephinia</i> sp. Woodstock	1	35.9	N	7	Y
<i>Nicotiana umbratica</i>	3	20.7	Suitable habitat possibly present; no records within 20 km of the application area despite several targeted surveys	18	Y
<i>Phyllanthus hebecarpus</i>	3	22.3	N	7	Y
<i>Ptilotus mollis</i>	4	3.3	Y; recorded within application area	43	Y
<i>Quoya zonalis</i>	T; EN	0	Y; recorded within application area	95	Y
<i>Rothia indica</i> subsp. <i>australis</i>	3	39.3	N	21	Y
<i>Stylidium weeliwollii</i>	3	21.6	Suitable habitat possibly present; no records within 20 km of the application area despite several targeted surveys	39	Y
<i>Terminalia supranitifolia</i>	3	21.8	Suitable habitat possibly present; no records within 20 km of the application area despite several targeted surveys	61	Y
<i>Themeda</i> sp. Panorama	1	4	Possible; recorded outside the application area	7	Y
<i>Triodia basitricha</i>	3	5.2	Y; recorded within application area	34	Y
<i>Triodia chichesterensis</i>	3	13.2	N	37	Y
<i>Vigna triodiophila</i>	3	22.8	N	21	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

B.4. Fauna analysis table

The following conservation significant fauna species have records within a 50 kilometre radius of the application area (GIS Database). Habitat suitability, likelihood of occurrence, and impact was determined utilising biological survey information (Ecologia, 2012a; 2012b; FMG, 2023d; GIS Database).

Species name	Conservation status		Habitat suitability and likelihood	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]	Further consideration required?
	WA	EPBC				
BIRDS						
<i>Falco hypoleucos</i> grey falcon	VU		Recorded outside application area. Limited preferred habitat within application area	16.7	Y	N
<i>Falco peregrinus</i> peregrine falcon	OS		Limited preferred habitat within application area	22	Y	N
MAMMALS						
<i>Dasyercus blythi</i> brush-tailed mulgara	P4		No preferred habitat present; unlikely	14.2	Y	N
<i>Dasyurus hallucatus</i> northern quoll	EN	EN	Recorded. Critical habitat for breeding, refuge, foraging, and dispersal present	within	Y	Y
<i>Lagorchestes conspicillatus leichardti</i> spectacled hare-wallaby (mainland)	P4		Limited preferred habitat present; unlikely	14.2	Y	N
<i>Leggadina lakedownensis</i> northern short-tailed mouse, kerakenga	P4		No preferred habitat present; unlikely	23.7	Y	N
<i>Macroderma gigas</i> ghost bat	VU	VU	Recorded outside application area. Foraging and temporary roost habitat available within application area	1.5	Y	Y
<i>Macrotis lagotis</i> bilby, dalgyte, ninu	VU	VU	No preferred habitat present; unlikely	15.4	Y	N
<i>Pseudomys chapmani</i> western pebble-mound mouse, ngadji	P4		Recorded outside application area. Extensive habitat available inside and outside application area	1.4	Y	N
<i>Rhinonictis aurantia</i> (Pilbara form) Pilbara leaf-nosed bat	VU	VU	Recorded. Foraging habitat and potential dry season roost habitat present within application area	within	Y	Y
<i>Sminthopsis longicaudata</i> long-tailed dunnart	P4		Recorded. Extensive habitat available inside and outside application area	within	Y	Y
REPTILES						
<i>Aniliios ganei</i> Gane's blind snake (Pilbara)	P1		No preferred habitat present; unlikely	4.8	Y	N
<i>Ctenotus nigrilineatus</i> pin-striped finessnout Ctenotus	P1		No preferred habitat present; unlikely	23.7	Y	N
<i>Liasis olivaceus barroni</i> Pilbara olive python	VU	VU	Recorded. Potential habitat utilised as travelling ground	within	Y	Y

VU: Vulnerable, EN: Endangered, CR: Critically Endangered, MI: Migratory, OS: Other specially protected species, P: Priority 1-4

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u> The application area contains threatened and priority flora, and conservation significant fauna species and their associated habitats. There are no known or mapped priority ecological communities within the application area.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> “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.”</p> <p><u>Assessment:</u> The application area contains potential breeding, foraging, and/or dispersal habitat for a number of conservation significant fauna species.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u> The application contains approximately 1,561 individuals of threatened flora species <i>Quoya zonalis</i> (Ecologia, 2012c; 2012d; 2016; 2022; 2023; Spectrum, 2020; 2021).</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> “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.”</p> <p><u>Assessment:</u> There are no known state or federally listed threatened ecological communities (TECs) located within or in close proximity to the application area (GIS Database). The nearest known threatened ecological community is the <i>Themeda</i> grasslands (<i>Themeda</i> sp. Hamersley Station) on cracking clays (Hamersley Station, Pilbara) state listed threatened ecological community (CR), located approximately 164.5 kilometres southwest of the application area (GIS Database).</p> <p>Flora and vegetation surveys of the application area and surrounds did not record vegetation that could be representative of a TEC (Ecologia, 2012c; 2012d; 2016; 2022; 2023; FMG, 2023d; Spectrum, 2020; 2021).</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> “Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</p> <p><u>Assessment:</u> 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 IBRA Pilbara Bioregion (Government of Western Australia, 2019).</p> <p>The application area is broadly mapped as Beard vegetation association 82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> (GIS Database). Approximately 99% of the pre-European extent of this vegetation association remains uncleared at both the state and bioregional level (Government of Western Australia, 2019). The application area is not considered a significant remnant of native vegetation in an area that has been extensively cleared.</p>	Not at variance	No
<p><u>Principle (h):</u> “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.”</p> <p><u>Assessment:</u> The application area is not located within any conservation areas (GIS Database). The nearest conservation area is Mungaroona Range Nature Reserve, located approximately 68.4 kilometres southwest of the application area (GIS Database). Given the distance to Mungaroona Range Nature Reserve, the proposed clearing is unlikely to have an impact on the environmental values of any conservation areas.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> Ecologia (2012c) identified two vegetation types within the application area that grow in association with drainage lines or along rivers, gorges, or creeks:</p> <ul style="list-style-type: none"> • ApTp • FpAtCo <p>In addition, based on surface water lines is it likely the following two Ecologia (2012c) vegetation units also grow in association with watercourses (GIS Database):</p> <ul style="list-style-type: none"> • Tw1 • AaTw3 <p>Potential impacts to vegetation growing in association with these watercourses may be minimised by the implementation of a watercourse management condition.</p>	At variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The application area is mapped within the Capricorn and Rocklea land systems (DPIRD, 2023; Van Vreeswyk et al., 2004; GIS Database). Neither land system are generally susceptible to erosion (DPIRD, 2023; Van Vreeswyk et al., 2004; GIS Database). The proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u> Several minor non-perennial drainage lines intersect the application area (GIS Database). Drainage lines in the Pilbara region generally only flow for short durations following rainfall events (FMG, 2023d). Intermittent flows normally occur during the wet season with long periods of no flow during the dry season (FMG, 2023d). The quality of surface water is unlikely to be significantly impacted from the proposed clearing.</p> <p>There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). The mapped groundwater salinity is 500-1000 total dissolved solids milligrams per litre, which is described as marginal water quality (GIS Database). The quality of groundwater is unlikely to be significantly impacted from the proposed clearing.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> The mapped soils and topographic contours (GIS Database) in the application area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p> <p>Several minor non-perennial drainage lines intersect the application area (GIS Database). Given these drainage lines in generally only flow for short durations following rainfall events (FMG, 2023d), the proposed clearing is unlikely to contribute to waterlogging.</p>	Not likely to be at variance	No

Appendix D. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation’s ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Supporting documentation excerpts

Table 1: Management measures FMG (2023d) will instate in order minimise any impact on flora and vegetation.

RISK PATHWAY AND IMPACTS	MANAGEMENT ACTIONS
<ul style="list-style-type: none"> • Unauthorised or over clearing resulting in unwanted direct loss of flora and vegetation • Unauthorised or over clearing resulting in direct loss of conservation significant flora 	<ul style="list-style-type: none"> • Where significant flora and vegetation have been identified, ensure they are recorded in the Corporate GIS and Document Management System and appropriately flagged in the field • Review the proposed ground disturbance and clearing against flora and vegetation data to avoid/minimise clearing of significant flora and vegetation • Ensure staff and contractors are aware of the location of significant flora and vegetation on site and their responsibility to ensure they are protected • Conduct vegetation clearing in accordance with a permit issued under the Land Use Certificate Procedure 100-PRTA- 0001. Internal Land Use Certificates (LUC) will be required prior to commencement of activities, which may include: <ul style="list-style-type: none"> ○ pre-clearance checks for conservation significant flora and/or vegetation undertaken by suitably experienced personnel prior to ground disturbance ○ areas to be cleared clearly delineated both on maps and on the ground ○ post-clearing audits undertaken to assess compliance with internal permits • Any plants that may be impacted will be flagged prior to clearing works, as per the requirements of the S40 permit
<ul style="list-style-type: none"> • Unauthorised vehicle movement resulting in direct loss of flora and vegetation • Unauthorised vehicle movement resulting direct loss of conservation significant flora 	<ul style="list-style-type: none"> • Vehicles will be confined to defined roads and access tracks • All Threatened and Priority Flora are to be identified on the ground by appropriate flagging prior to clearing • Ensure staff and contractors are aware of the location of significant flora and vegetation on site and their responsibility to ensure they are protected
<ul style="list-style-type: none"> • Introduction of weed species via increased vehicle movement resulting in degradation of vegetation 	<ul style="list-style-type: none"> • Vehicles will be confined to defined roads and access tracks • Weed Hygiene Management will be implemented as per Weed Management Plan 100-PL-EN-1017
<ul style="list-style-type: none"> • Vehicle movements, ground disturbance and clearing activities leading to increased dust 	<ul style="list-style-type: none"> • Vehicles will be confined to defined roads and access tracks • Vehicles will adhere to appropriate speed limits on all roads

Table 2: Management measures FMG (2023d) will instate in order minimise any impact on fauna.

RISK PATHWAY AND IMPACTS	MANAGEMENT ACTIONS
<ul style="list-style-type: none"> • Unauthorised or over clearing resulting in direct loss of fauna habitat • Unauthorised or over clearing resulting in habitat fragmentation 	<ul style="list-style-type: none"> • Where conservation significant fauna and associated habitat has been identified, ensure they are recorded in the Corporate GIS and Document Management System. • Review the proposed ground disturbance and clearing against fauna data to avoid/minimise clearing of conservation significant fauna habitat. • Ensure staff and contractors are provided with appropriate training to ensure conservation significant fauna and associated habitat are protected. • Conduct vegetation clearing in accordance with a permit issued under the Land Use Certificate Procedure 100-PR-TA-0001. Internal Land Use Certificates (LUC) will be required prior to commencement of activities, which may include: <ul style="list-style-type: none"> ○ pre-clearance checks for conservation significant flora and/or vegetation undertaken by suitably experienced personnel prior to ground disturbance, ○ areas to be cleared clearly delineated both on maps and on the ground, ○ post-clearing audits undertaken to assess compliance with internal permits. • MS993 – Condition 10: A Pilbara Leaf-nosed Bat Habitat Survey and Research Plan will be prepared and implemented in accordance with Condition 10-6 of MS 993. • MS993 – Condition 11: Iron Bridge will implement the Northern Quoll Management Plan (662MI-5500-PL-EN-0001, Appendix 3642) as required under Condition 11 of MS 993 which outlines actions such as: <ul style="list-style-type: none"> ○ equipment design will be specified to be within Australian standard noise limits; ○ vehicle speed limits will be enforced for all Project roads and tracks; ○ Noise emissions will comply with the Environmental Protection (Noise) Regulations 1997.
<ul style="list-style-type: none"> • Unauthorised vehicle movement resulting in direct loss of fauna habitat 	<ul style="list-style-type: none"> • Vehicles will be confined to defined roads and access tracks.
<ul style="list-style-type: none"> • Unauthorised vehicle movement resulting fauna strike 	<ul style="list-style-type: none"> • Vehicles will be confined to defined roads, access tracks and drill lines. • Vehicles will adhere to appropriate speed limits on all roads. • Vehicle movement will be restricted to daylight hours only. • Where injury or death has occurred to native fauna as a result of Fortescue exploration activities, investigate and report the incident. Causes of incidents will be determined and management procedures will be modified (as required), with measures taken to prevent re-occurrence of incidents.

Appendix F. Sources of information

F.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)

- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Pre-European Vegetation Statistics
- Interim Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

F.2. References

- Bat Call WA (2021) A review of Pilbara leaf-nosed bat ecology, threats and survey requirements. Report prepared for the Department of Agriculture, Water and Environment, by Bat Call WA Pty Ltd, May 2021.
- Bureau of Meteorology (BoM) (2023) Bureau of Meteorology Website – Climate Data Online, Marble Bar. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 12 September 2023).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023) Advice received in relation to Clearing Permit Application CPS 10212/1. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Western Australia, September 2023.
- Department of Environment Regulation (DER) (2014) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf
- Department of Planning, Lands and Heritage (DPLH) (2023) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 13 September 2023).
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- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.pdf
- Ecologia (2012a) North Star Project Level 2 Terrestrial Vertebrate Fauna Assessment. Prepared by Ecologia Environment, for Fortescue Metals Group Ltd, July 2012.
- Ecologia (2012b) North Star Project Targeted Conservation Significant Fauna Survey. Prepared by Ecologia Environment, for Fortescue Metals Group Ltd, March 2012.
- Ecologia (2012c) North Star Vegetation and Flora Assessment. Prepared by Ecologia Environment, for Fortescue Metals Group Ltd, July 2012.
- Ecologia (2012d) *Pityrodia* sp. Marble Bar Targeted Flora Survey. Prepared by Ecologia Environment, for Fortescue Metals Group Ltd, August 2012.
- Ecologia (2016) Iron Bridge North Star Stage 2 *Pityrodia* sp. Marble Bar Regional Survey 2015. Prepared by Ecologia Environment, for FMG Iron Bridge (Aust) Pty Ltd, January 2016.
- Ecologia (2022) *Quoya zonalis* targeted flora survey at West Star Iron Bridge (Priority 1 area). Prepared by Ecologia Environment, for Fortescue Metals Group Ltd, October 2022.
- Ecologia (2023) North Star Extension Targeted Flora Assessment. Prepared by Ecologia Environment, for FMG Iron Bridge (Aust) Pty Ltd, June 2023.
- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf
- Environmental Protection Authority (EPA) (2016) Technical Guidance – Terrestrial Fauna Surveys. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf

- Environmental Protection Authority (EPA) (2020) Technical Guidance – Terrestrial Fauna Surveys. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf
- FMG (2016) Northern Quoll Management Plan – North Star Project. Prepared by Ecologia Environment, for FMG Iron Bridge (Aust) Pty Ltd, June 2016.
- FMG (2023a) Additional information for clearing permit CPS 10212/1, received 9 October 2023.
- FMG (2023b) Additional information for clearing permit CPS 10212/1, received 6 December 2023.
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4. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016</i> , Western Australia
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)
DCCEEW	Department of Climate Change, Energy, the Environment and Water, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia (now DEMIRS)
DMP	Department of Mines and Petroleum, Western Australia (now DEMIRS)
DoEE	Department of the Environment and Energy (now DCCEEW)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPA	Environmental Protection Authority, 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:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

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 in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX Extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that "*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes 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 fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P Priority species:

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species 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.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened 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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.