



## 1. Application details and outcomes

### 1.1. Permit application details

Permit number:	10222/1
Permit type:	Purpose Permit
Applicant name:	Hamersley Iron Pty Limited
Application received:	29 May 2023
Application area:	15 hectares
Purpose of clearing:	Mineral exploration, hydrological investigations and associated activities
Method of clearing:	Mechanical Removal
Tenure:	<i>Iron Ore (Hamersley Range) Agreement Act 1963</i> , Mineral Lease 4SA (AML 70/4).
Location (LGA area/s):	Shire of Ashburton
Colloquial name:	Metawandy Project

### 1.2. Description of clearing activities

Hamersley Iron Pty Limited proposes to clear up to 15 hectares of native vegetation within a boundary of approximately 74.8 hectares, for the purpose of mineral exploration, hydrological investigations and associated activities. The project is located approximately 115 kilometres west of Tom Price, within the Shire of Ashburton (GIS Database).

The application is to allow mineral exploration and associated activities which will include hydrological investigations, environmental surveys & monitoring, heritage surveys and monitoring and access.

### 1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	18 December 2023
Decision area:	15 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 Mines, Industry Regulation and Safety (DMIRS) (now the Department of Energy, Mines, Industry Regulation and Safety) on 29 May 2023. DMIRS 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 A), relevant datasets (Appendix D), supporting information provided by the applicant, including the results of a flora and vegetation survey, the clearing principles set out in Schedule 5 of the EP Act (Appendix C), 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;
- impacts to riparian vegetation
- impacts to conservation significant flora; and
- the loss of native vegetation that may provide foraging or dispersal habitat for conservation significant fauna.

After consideration of the available information the Delegated Officer determined the proposed clearing is unlikely to lead to having adverse impacts on the conservation of significant flora and fauna and the impacts of clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

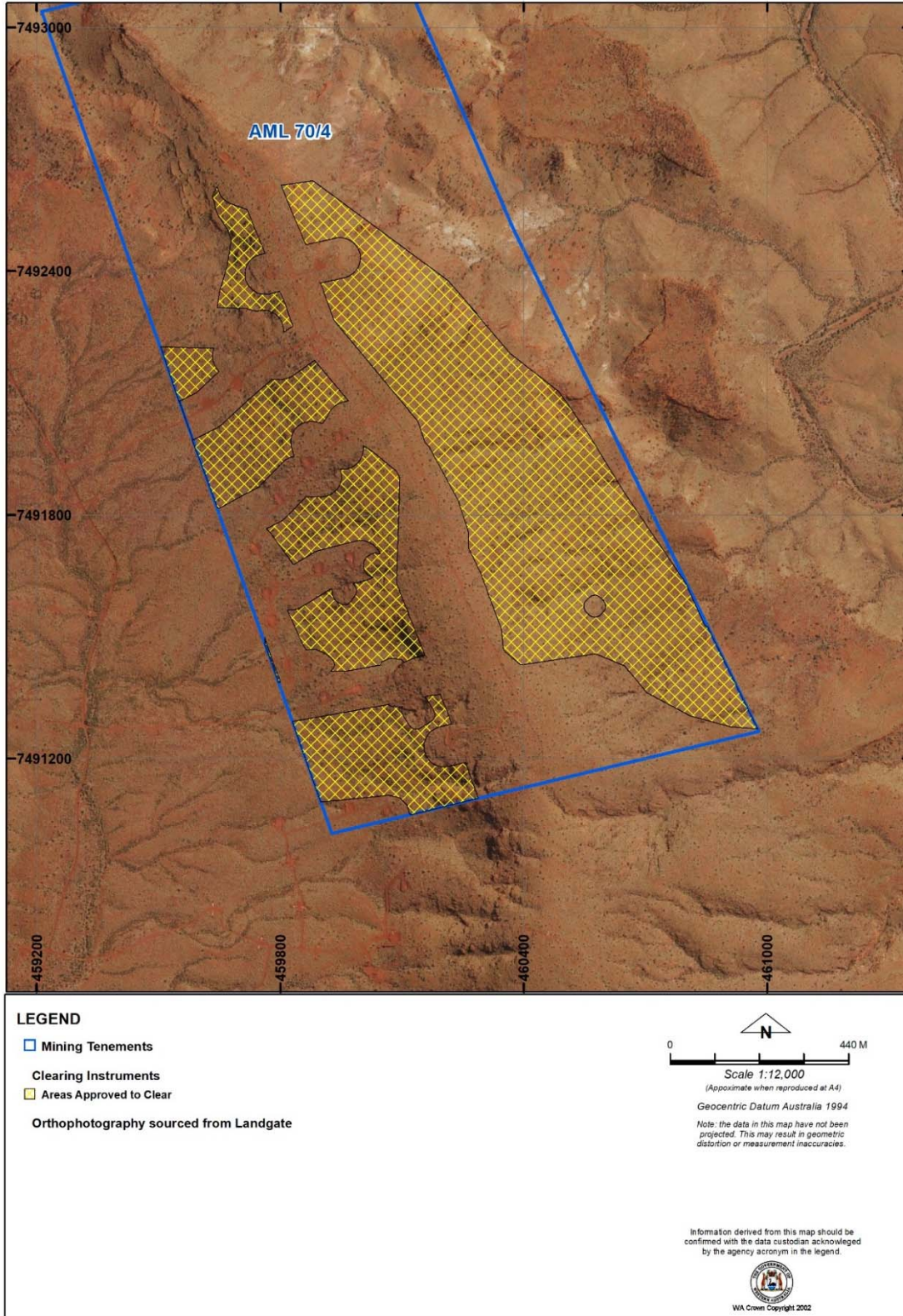
The Delegated Officer decided to grant a clearing permit subject to conditions to:

- vegetation management condition to minimise the clearing to riparian vegetation where practicable and to maintain surface water flows and/or reinstate water flow downstream into existing natural drainage lines;
- avoid, minimise to reduce the impacts and extent of clearing;

- take hygiene steps to minimise the risk of the introduction and spread of weeds; and
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity.

### 1.5. Site map

A site map of proposed clearing is provided in Figure 1 below.



**Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit.**

## 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 (treatys) 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, 2020)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

No evidence of avoidance or mitigation measures was provided to support the application.

### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) 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 (see Appendix B) identified the impacts of the proposed clearing are limited and able to be managed to be environmentally acceptable with standard avoid and minimize, hygiene, watercourse and directional clearing management conditions.

#### 3.2.1. Biological values - Clearing Principle (a)

##### Assessment

A flora and vegetation survey was conducted over the application area by AECOM on 1 June 2022. This survey recorded four priority flora species:

- *Indigofera rivularis* (P3, formerly named *Indigofera* sp. Bungaroo Creek)
- *Ptilotus mollis* (P4)
- *Sida* sp. Barlee Range (P4)
- *Triodia pisolitica* (P3, formerly named *Triodia* sp. Robe River)

All four species are restricted to one or two bioregions, however their ranges within those regions are wide ranging with 43 to 64 known locations from the Western Australian Herbarium (1998-).

Rio Tinto (2023) maintains their own flora database, with *Indigofera rivularis* recorded at 3,390 locations, *Ptilotus mollis* recorded at 317 locations, *Sida* sp. Barlee Range recorded at 1,573 locations, and *Triodia pisolitica* recorded at 6,889 locations.

Species	No. Recorded in Application Area	No. of Rio Tinto Records	No. Individuals in Rio Tinto Database	% impact if all individuals in App. Area were cleared
<i>Indigofera rivularis</i> (P3)	23	3,390	29,168	0.07
<i>Ptilotus mollis</i> (P4)	63	317	7,678	0.82

<i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) (P4)	4	1573	12,110	0.03
<i>Triodia pisoliticola</i> (P3)	4,021	6,889	326,787	1.2

Given that the proposed clearing is for up to 15 hectares within a boundary of approximately 74.8 hectares, it is unlikely that the maximum impact to these species will occur and would be much lower.

There is a potential that individuals of these species will be lost through the proposed clearing, however, the overall impact is relatively low at a regional and local scale and unlikely to alter the conservation status of any of them.

#### Conclusion

Due to the general low impact of the proposed clearing (15 hectares for exploration), and the existing requirement to revegetate and rehabilitate cleared areas, the above impacts will not require specific flora or fauna management conditions.

There may be impacts to individual priority flora from the proposed clearing. However, it is considered unlikely to significantly impact the conservation status of these species. The individuals potentially lost through clearing may be reinstated through the implementation of a rehabilitation condition.

#### Conditions

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

- take hygiene steps to minimise the risk of the introduction and spread of weeds; and
- retain cleared vegetation and topsoil and respread this on areas already cleared to undertake revegetation and rehabilitation.

### **3.3. Relevant planning instruments and other matters**

The clearing permit application was advertised on 4 July 2023 by the Department of 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 (WC 2001/005) over the area under application (DPLH, 2023). This claim has been registered with the Native Title Tribunal on behalf of the claimant group. However, the 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 Sites of Aboriginal Significance located in the area applied to clear (DPLH, 2023). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

Other relevant authorisations required for the proposed land use include:

- A Programme of Work 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.

**End**

**A.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). The application area is located approximately 120 kilometres west of Tom Price within the Shire of Ashburton, in the Pilbara bioregion (GIS Database).</p> <p>The application area represents only a small area of the extensive <i>Iron Ore (Hamersley Range) Agreement Act 1963</i> stage agreement mineral lease (GIS Database). The state agreement mineral lease spans across Hamersley Range and the surrounds (GIS Database). Over 99% of the native vegetation within a 50-kilometre radius of the application area remains uncleared (GIS Database).</p>
Ecological linkage	<p>The application area is unlikely to represent a significant ecological linkage as the majority of the surrounding native vegetation remains uncleared (GIS Database).</p>
Conservation areas	<p>The application area is not located within any known conservation areas (GIS Database). The nearest conservation area is Barlee Range Nature Reserve located approximately 71 kilometres southwest of the application area (GIS Database).</p>
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation association: 82: Hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by AECOM during June, 2022. The following vegetation associations were recorded within the application area (AECOM, 2023):</p> <p><b>Hills and Slopes</b></p> <ul style="list-style-type: none"> <li>S2: Scattered low trees of <i>Eucalyptus leucophloia</i> with scattered <i>Hakea chordophylla</i> and <i>Acacia pruinocarpa</i> over low open shrubland of <i>Acacia arida</i> over open hummock grassland of <i>Triodia wiseana</i> with scattered <i>Triodia pisolitica</i>.</li> <li>S3: Low open woodland to scattered trees of <i>Eucalyptus leucophloia</i> over scattered tall shrubs of <i>Acacia pruinocarpa</i> over open shrubland of <i>Acacia bivenosa</i> and <i>Acacia maitlandii</i> and <i>Petalostylis labicheoides</i> over open hummock grassland of <i>Triodia wiseana</i> and <i>Triodia pisolitica</i>.</li> </ul> <p><b>Undulating Plains</b></p> <ul style="list-style-type: none"> <li>U2: Open shrubland of <i>Acacia bivenosa</i>, <i>Acacia kempeana</i> and <i>Acacia ancistrocarpa</i> over open hummock grassland of <i>Triodia wiseana</i>.</li> </ul> <p><b>Plains</b></p> <ul style="list-style-type: none"> <li>P1: Tall shrubland to tall open shrubland of <i>Acacia kempeana</i> and <i>Acacia bivenosa</i> with scattered <i>Acacia pruinocarpa</i> over open hummock grassland of <i>Triodia wiseana</i>.</li> </ul> <p><b>Gullies</b></p> <ul style="list-style-type: none"> <li>G1: Low open woodland of <i>Corymbia ferritcola</i> with scattered <i>Eucalyptus leucophloia</i> over tall open shrubland of <i>Acacia hamersleyensis</i>, <i>Acacia citrinoviridis</i> and <i>Acacia pruinocarpa</i> over open shrubland of <i>Dodonaea pachyneura</i>, <i>Prostanthera albiflora</i>, <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>Santalum lanceolatum</i> over open hummock grassland of <i>Triodia pisolitica</i> and <i>Triodia wiseana</i> over scattered tussock grasses of <i>Eriachne mucronata</i> and <i>Cymbopogon ambiguus</i>.</li> <li>G2: Scattered low trees of <i>Eucalyptus leucophloia</i> over open shrubland of <i>Stylobasium spathulatum</i>, <i>Acacia pruinocarpa</i>, <i>Gossypium robinsonii</i>, <i>Petalostylis labicheoides</i>, <i>Acacia bivenosa</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> over open hummock grassland of <i>Triodia wiseana</i> with scattered <i>Triodia pisolitica</i> over scattered tussock grasses of <i>Eriachne mucronata</i> and <i>Cymbopogon ambiguus</i>.</li> </ul>
Vegetation condition	<p>The vegetation survey (AECOM, 2023) indicates the vegetation within the proposed clearing area is in Excellent to Very Good (Trudgen, 1991) condition, described as</p> <ul style="list-style-type: none"> <li>Excellent: Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.</li> <li>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.</li> </ul>

Characteristic	Details
	The full Trudgen (1991) condition rating scale is provided in Appendix CC.
Climate and landform	The climate of application area region is characterised as an arid to semi-arid climate with annual rainfall of approximately 265.5 millimetres (BoM, 2023). Mean maximum temperature ranges from 33.3°C in January to 16.1°C in July (BoM, 2023). The landform of the application area is mapped with elevations ranging between 470 – 580 metres AHD (GIS Database).
Soil description	The soil is mapped as Fa15. The Fa15 soil unit is described as ‘Ranges of basalt along with shale, chert, jaspilite, and dolomite; some narrow winding valley plains (DPIRD, 2023). The soils are frequently shallow and there are extensive areas without soil cover.’
Land degradation risk	The application area is located within the Newman Land System and Platform Land System (GIS Database). These land systems are described as: <ul style="list-style-type: none"> <li>• Newman Land System: Rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands.</li> <li>• Platform Land System: Dissected slopes and raised plains supporting hard spinifex grasslands.</li> </ul> These land systems are generally not susceptible to erosion.
Waterbodies	There are no permanent waterbodies or watercourses within the application area, however, there are several minor non-perennial watercourses present (GIS Database).
Hydrogeography	The application area is not mapped within any legislated Country Areas Water Supply area or Public Drinking Water Source Area (GIS Database). 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). The mapped groundwater salinity is within 500-1,000 total dissolved solids milligrams per litre, which is described as marginal water quality (GIS Database).
Flora	A total of 63 significant flora species were identified as potentially occurring during the desktop assessment, including one species listed as Threatened under the EPBC Act and BC Act and 62 Priority flora (AECOM, 2023; GIS Database). Four Priority flora species were identified during the flora survey within the application area (AECOM, 2023).
Ecological communities	The application area is not mapped within any threatened or priority ecological communities (GIS Database). The nearest ecological community is ‘ <i>Triodia pisolitica</i> (previously <i>Triodia</i> sp. Robe River) assemblages of mesas of the west Pilbara’ priority 3 ecological community, located approximately 25 kilometres north of the application area (GIS Database).  While <i>Triodia pisolitica</i> is present within the application area, the landforms present are not analogous to where the PEC has been mapped (GIS Database). The application area is unlikely to be considered part of the PEC (GIS Database).
Fauna	The desktop assessment identified 27 conservation significant fauna species, including 17 bird, six mammal, three reptile and one fish species (AECOM, 2023). No evidence of conservation significant fauna was recorded during the survey, however there were five species determined to be potentially occurring within the application area (AECOM, 2023). Six fauna habitats were mapped in the application area (AECOM, 2023).

## A.2. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (Appendix A), and biological survey information (AECOM, 2023; GIS Database), the following conservation significant species are considered to be potentially occurring.

Species	Cons. Status <sup>1</sup>	Habitat <sup>2</sup>
<b>Known</b>		
<i>Ptilotus mollis</i>	P4	Stony hills and screes.
<i>Sida</i> sp. Hamersley Range (K. Newbey 10692)	P3	Low open woodland over hummock grassland of <i>Triodia</i> sp.
<b>Likely</b>		
<i>Eremophila magnifica</i> subsp. <i>magnifica</i>	P4	Skeletal soils over ironstone. Rocky screes.
<i>Eremophila magnifica</i> subsp. <i>velutina</i>	P3	Skeletal soils over ironstone. Summits.
<i>Indigofera rivularis</i>	P3	Creek lines or along steep slopes in skeletal soils from the Brockman Ironstone Formation. Used to be known as sp. Bungaroo Creek.
<i>Triodia pisoliticola</i>	P3	Skeletal soils on ironstone. Summits and mesas or other hilly areas. Has been found on midslope and valleys. Restricted to Robe Pisolite. Previously known as sp. Robe River.
<b>May</b>		
<i>Acacia bromilowiana</i>	P4	Red skeletal stony loam, orange-brown pebbly, gravel loam, laterite, banded ironstone, basalt. Rocky hills, breakaways, scree slopes, gorges, creek beds.
<i>Cyanthillium gracile</i>	P3	Rocky slopes, ironstone, gullies, summit of hills.
<i>Dampiera anonyma</i>	P3	Skeletal red brown to brown gravelly soil over banded ironstone, basalt, shale, and jaspilite. Hill summits, upper slopes (above 1000m).
<i>Lepidium catapycnon</i>	P4	Skeletal soils. Hill slopes.
<i>Oxalis</i> sp. Pilbara (M.E. Tudgeon 12725)	P2	Shaded areas of rock outcrops and gullies.
<i>Rhynchosia bungarensis</i>	P4	Rock piles, gorges, riverbeds, alluvial soils in shrubland.
<i>Senna</i> sp. Barlee Range (S. van Leeuwen 1520)	P2	Skeletal soils in rocky areas especially scree slopes and rock piles in small chines and gullies.
<i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642)	P3	Skeletal red soils pockets. Steep slope.
<i>Triodia basitricha</i>	P3	Occurs on rocky and gravelly slopes of mountains or low hills.

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

**A.3. Fauna analysis table**

Taxon	Common Name	Cons. Status <sup>1</sup>		Habitat <sup>2</sup>
		EPBC Act	DBCA / BC Act	
<i>Anilius ganeii</i>	Gane's Blind Snake (Pilbara)		P1	Gane's Blind Snake is known from Newman to Pannawonica where it is associated with moist gorges and gullies (Wilson & Swan 2010).
<i>Falco peregrinus</i>	Peregrine Falcon		OS	The Peregrine Falcon is widespread across Australia and inhabits a variety of habitats from rainforests to arid zone, coast to alpine (BirdLife 2022).
<i>Macroderma gigas</i>	Ghost Bat	VU	VU	The Ghost Bat occupies the arid Pilbara landscape where they roost in caves, rock crevices and old mines during the day. Foraging occurs at night, with their diet comprising birds, other bats, reptiles, frogs and large insects (TSSC 2016a).
<i>Pseudomys chapmani</i>	Western Pebble-mound Mouse, Ngadji		P4	Colonies occur on the gentler slopes of rocky ranges where the ground is covered by a stony mulch and vegetated by hard spinifex, often with a sparse overstorey of Eucalyptus and scattered shrubs, typically Senna, Acacia and Ptilotus (Van Dyck & Strahan 2008).
<i>Rhinonicteris aurantia</i> (Pilbara)	Pilbara Leaf-nosed Bat	VU	VU	The Pilbara Leaf-nosed Bat requires caves or mines with hot humid microclimates for roosting (Van Dyck & Strahan 2008; Churchill 1998).

EPBC Act and BC Act: VU Vulnerable, EN Endangered, OS Other Specially Protected Species

DBCA: P Priority

**Appendix B. Assessment against the clearing principles**

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>A total of 88 taxa were recorded in the survey area, comprising 51 genera and 27 families (AECOM, 2023). There are no known Threatened flora, Threatened or Priority Ecological Communities within the permit area (AECOM, 2023; GIS Database). Four Priority flora species have been recorded within the application area (AECOM, 2023).</p>	May be 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></p> <p>Six broad fauna habitats were recorded during the survey of the application area (AECOM, 2023):</p> <ul style="list-style-type: none"> <li>• Rocky slopes;</li> <li>• Undulating slopes and low rises;</li> <li>• Gullies;</li> <li>• Mulga on plains;</li> <li>• Drainage line – minor; and</li> <li>• Rocky breakaways and cliffs.</li> </ul> <p>These habitats are considered suitable for two Threatened species (Ghost Bat, and Pilbara Leaf-nosed Bat), two Priority species (Gane's Blind Snake (Priority 1) and Western Pebble-mound Mouse (Priority 4)) and one Other Specially Protected Fauna Species (Peregrine Falcon). None of these significant fauna species are considered to be dependent on these habitats for their survival. The habitats present may provide</p>	Not likely to be at variance	No



Assessment against the clearing principles	Variance level	Is further consideration required?
foraging habitat for fauna; however, the proposed clearing is not expected to impact the conservation status or core habitat for any conservation significant species.		
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>There are no known records of Threatened flora within the application area (GIS Database). A flora survey of the application area did not record any species of Threatened flora (AECOM, 2023).</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database).</p> <p>A flora and vegetation survey of the application area did not identify any TECs (AECOM, 2023).</p>	Not likely to be at variance	No
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>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).</p> <p>The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not at variance	No
<p><u>Principle (h):</u> <i>“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></p> <p><u>Assessment:</u></p> <p>The application area is not located within any known conservation area (GIS Database). The nearest known conservation area is Barlee Range Nature Reserve located approximately 71 kilometres southwest of the application area (GIS Database). At this distance it is considered unlikely that the proposed clearing will impact on the environmental values of any conservation area.</p>	Not likely to be at variance	No
<b>Environmental value: land and water resources</b>		
<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></p> <p>The application area has several minor ephemeral drainage lines (GIS Database). Drainage lines within the application area are only likely to flow following major rainfall events. As the vegetation associated with these ephemeral drainage lines may be cleared, it is recommended to maintain surface water flow or reinstate downstream into existing natural drainage lines.</p> <p>Potential impacts to watercourses be managed through the continuous implementation of a vegetation management condition, which includes avoiding clearing riparian vegetation and maintaining surface water flow.</p>	At variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<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></p> <p>The application area is located within the Newman Land System and Platform Land Systems (GIS Database). These land systems are generally not prone to erosion (Van Vreeswyk et al., 2004). The proposed clearing of up to 15 hectares of native vegetation within a boundary of approximately 74.8 hectares, for the purpose of mineral exploration, hydrological investigations and associated activities is unlikely to cause appreciable 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></p> <p>The application area is not mapped within any legislated Country Areas Water Supply area or Public Drinking Water Source Area (GIS Database). The application area is located within the Pilbara Surface Water Area and Pilbara Groundwater Area proclaimed under the Rights in Water and Irrigation Act 1914 (GIS Database).</p> <p>Given the relatively low amount of clearing (15 hectares) for mineral exploration, hydrological investigations and associated activities, the removal of native vegetation is unlikely to have a significant impact on surface or underground water. The vegetation management condition will also assist in mitigating any potential impacts to surface water by minimising clearing riparian vegetation where practicable.</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></p> <p>The climate of the region is tropical semi-arid to dry, with an annual rainfall average of approximately 461.8 millimetres (BoM, 2023).</p> <p>There are no permanent water courses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.</p>	Not likely to be at variance	No

### Appendix C. 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.

Condition	Description
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 D. Sources of information

### D.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Bush Forever (Regional Scheme) (DPLH-022)
- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- 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
- 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)

### D.2. References

- AECOM (2023) Metawandy AR-15- 13649C Native Vegetation Clearing Permit. Flora, Vegetation and Fauna Habitat Survey. Prepared for Rio Tinto Group, May 2023.
- Bureau of Meteorology (BoM) (2023) Bureau of Meteorology Website – Climate Data Online, Paraburdoo Aero (Station 7185). Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 15 December 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](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 15 December 2023).
- Department of Primary Industries and Regional Development (DPIRD) (2023) NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia. URL: <https://dpiird.maps.arcgis.com/apps/webappviewer/index.html?id=662e8cbf2def492381fc915aaf3c6a0f> (Accessed 15 December 2023).
- 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](https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.pdf)
- 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](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) (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](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)
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- 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.

## 4. Glossary

### Acronyms:

<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i> , Western Australia
<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>DAA</b>	Department of Aboriginal Affairs, Western Australia (now DPLH)
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia (now DPIRD)
<b>DCCEEW</b>	Department of Climate Change, Energy, the Environment and Water, Australian Government
<b>DBCA</b>	Department of Biodiversity, Conservation and Attractions, Western Australia
<b>DEMIRS</b>	Department of Energy, Mines, Industry Regulation and Safety
<b>DER</b>	Department of Environment Regulation, Western Australia (now DWER)
<b>DMIRS</b>	Department of Mines, Industry Regulation and Safety, Western Australia (now DEMIRS)
<b>DMP</b>	Department of Mines and Petroleum, Western Australia (now DEMIRS)
<b>DoEE</b>	Department of the Environment and Energy (now DCCEEW)
<b>DoW</b>	Department of Water, Western Australia (now DWER)
<b>DPaW</b>	Department of Parks and Wildlife, Western Australia (now DBCA)
<b>DPIRD</b>	Department of Primary Industries and Regional Development, Western Australia
<b>DPLH</b>	Department of Planning, Lands and Heritage, Western Australia
<b>DRF</b>	Declared Rare Flora (now known as Threatened Flora)
<b>DWER</b>	Department of Water and Environmental Regulation, Western Australia
<b>EP Act</b>	<i>Environmental Protection Act 1986</i> , Western Australia
<b>EPA</b>	Environmental Protection Authority, Western Australia
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
<b>GIS</b>	Geographical Information System
<b>ha</b>	Hectare (10,000 square metres)
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>PEC</b>	Priority Ecological Community, Western Australia
<b>RIWI Act</b>	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
<b>TEC</b>	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.