



# Clearing Permit Decision Report

## 1. Application details and outcomes

### 1.1. Permit application details

<b>Permit number:</b>	9828/1
<b>Permit type:</b>	Purpose Permit
<b>Applicant name:</b>	PMR Quarries Pty Ltd
<b>Application received:</b>	29 July 2022
<b>Application area:</b>	45.8 hectares
<b>Purpose of clearing:</b>	Mineral Production and Associated Activities
<b>Method of clearing:</b>	Mechanical Removal
<b>Tenure:</b>	Mining Lease 45/1233
<b>Location (LGA area/s):</b>	Town of Port Hedland

### 1.2. Description of clearing activities

PMR Quarries Pty Ltd proposes to clear up to 45.8 hectares of native vegetation within a boundary of approximately 75 hectares, for the purpose of establishing a sand mining operation adjacent to and within Petermarer Creek. The project is located approximately 27 kilometres south east of nearest Port Hedland, within the Shire of Town of Port Hedland.

The application is to allow for the shallow extraction of alluvial sand from the creek line and banks, screening and stockpiling sand, truck loading, equipment laydown, machinery/vehicle parking and amenities.

### 1.3. Decision on application and key considerations

<b>Decision:</b>	Grant
<b>Decision date:</b>	22 October 2022
<b>Decision area:</b>	45.8 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) on 29 July 2022. 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, 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 riparian vegetation; and
- potential land degradation in the form of wind erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), 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:

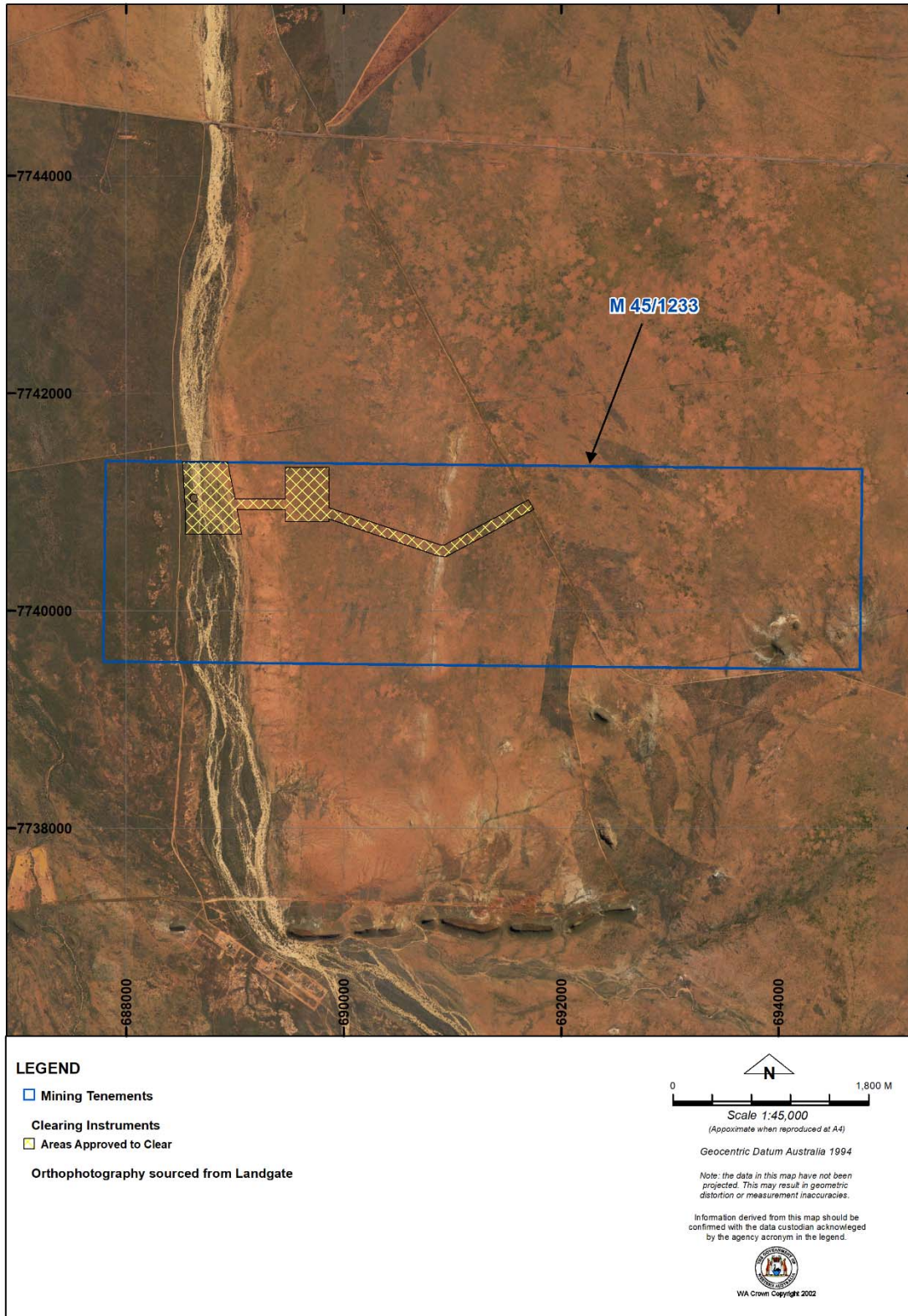
- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- where practicable, avoid clearing riparian vegetation;

- no clearing of significant trees (those with a diameter of 50 centimetres or more at 1.5 metres from the base of the tree); and
- commence purpose for which clearing was undertaken (mining and associated activities) no later than three months after undertaking clearing to reduce the risk of erosion.

### 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).

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016).

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating the following avoidance / mitigation measures (Landform Research, 2021b; PMR Quarries 2022):

- vegetation will be avoided wherever possible with activities going around trees were possible;
- vegetation on the banks will not be impacted where possible, setback from the bank of the river has been designed to avoid the root zone of any fringing small isolated *Corymbia* located on the river bank;
- the resource area has been selected at the north of the tenement in an area of bare sand to reduce impact to vegetation;
- survey footprint will be surveyed and marked out prior to clearing;
- use of various surface treatment on exposed or disturbed soils to stabilise soils;
- wetting down unsealed areas to suppress dust generation;
- schedule clearing activities at times of low dust risk and
- location of the access point to Petermarer creek will be formed at a location and in a manner that will not lead to significant future erosion.

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 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 identified that the impacts of the proposed clearing present a risk to biological values (fauna). 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 (fauna) - Clearing Principles (b)

##### Assessment

The desktop assessment conducted by Ecotec identified a total of 309 species of fauna as having been previously recorded within a 20 kilometre radius of the proposed area (Ecotec, 2018). Based on the records of conservation significant fauna and the site characteristics within the application area, 16 conservation significant species are considered as potentially occurring within the application area (Ecotec, 2018; GIS Database):

- Northern quoll (*Dasyurus hallucatus*) – EPBC Act – Endangered;
- Ghost bat (*Macroderma gigas*) – EPBC Act - Vulnerable;
- Pilbara leaf-nosed bat (*Rhinonicteris aurantia* (Pilbara)) – EPBC Act – Vulnerable;
- Grey falcon (*Falco hypoleucos*) – EPBC Act – Vulnerable;
- Brush-tailed mulgara (*Dasycercus blythi*) – Priority 4;
- Lesser sand plover (*Charadrius mongolus*) – EPBC Act - Endangered and Migratory;
- Red-necked phalarope (*Phalaropus lobatus*) – EPBC Act – Migratory;
- Long-toed stint (*Calidris subminuta*) – EPBC Act – Migratory;

- Oriental pratincole (*Glareola maldivarum*) – EPBC Act – Migratory;
- White-winged black tern, white-winged tern (*Chlidonias leucopterus*) – EPBC Act – Migratory;
- Red-necked stint (*Calidris ruficollis*) – EPBC Act – Migratory;
- Caspian tern (*Hydroprogne caspia*) – EPBC Act – Migratory;
- Little curlew, little whimbrel (*Numenius minutus*) – EPBC Act – Migratory;
- Osprey, eastern osprey (*Pandion cristatus*) – EPBC Act – Migratory;
- Common greenshank, greenshank (*Tringa nebularia*) – EPBC Act – Migratory;
- Terek sandpipe (*Xenus cinereus*) – EPBC Act – Migratory.

The northern quoll (*Dasyurus hallucatus*) has over 500 records within a 20 kilometre radius of the application area (Ecotec, 2018). Recorded activity tends to be concentrated on the rocky outcrops, including the rocky outcrop that passes through the project area (Ecotec, 2018). The rocky outcrop habitat present within the application area does not appear to provide any suitable denning habitat for the northern quoll and it is suspected that this species may utilise this area when foraging for food (Ecotec, 2018). The proposed access road has been designed to pass through a gap in the outcrop to ensure the outcrop will not be impacted by the proposed development (Ecotec, 2018).

The Ghost bat (*Macroderma gigas*) has 62 records within a 20 kilometre radius of the application area and the Pilbara leaf-nosed bat (*Rhinonictis aurantia* (Pilbara)) has five records within a 20 kilometre radius of the application area (Ecotec, 2018; GIS Database). The ephemeral drainage line habitat located within the application area may provide foraging habitat for the two bat species, however no suitable roosting habitat exists in the surrounding area (Ecotec, 2018).

The Grey falcon (*Falco hypoleucos*) has three records within a 20 kilometres radius of the application area (GIS Database). This species occurs in a wide range of habitats including lightly timbered country, stony plains and lightly timbered Acacia shrubland (Ecotec, 2018). Suitable habitat is present, however it is not likely to be significant to the species (Ecotec, 2018).

Brush-tailed mulgara (*Dasyercus blythi*) has 35 records within a 20 kilometre radius of the application area (Ecotec, 2018; GIS Database). The sand plain habitat present within the application area provides suitable habitat (Ecotec, 2018). However, the presence of predators, frequent burning and grazing has reduced habitat quality and therefore the species is not likely to rely solely on the habitat present within the application area (Ecotec, 2018). Long unburnt areas within the sandplain support much larger spinifex hummocks and denser stands of Acacia and provides habitat for burrowing animals (Ecotec, 2018). It is noted in the Mining Proposal that a commitment has been made to search for Mulgara species with fauna expected to be relocated or the facilities moved to reduce potential impacts (Landform Research, 2021b).

Eleven species of birds listed as migratory species could potentially occur within the application area (GIS Database). Most of these birds are dependent on coastal habitat for feeding and resting prior to migrating to the northern hemisphere and are recorded in association with the Port Hedland Saltworks which is located approximately 14 kilometres north (GIS Database). It is considered that these species could potentially be infrequent short term visitors in association with the lasting pools in the creek, however do not rely solely on the habitat within the application area (Ecotec, 2018).

The broad ephemeral drainage line (Petermarer Creek) supports a range of species with larger trees providing perching and nesting habitat for birds and protects banks from surface erosion (Ecotec, 2018). Impacts to significant vegetation in the waterway/drainage lines (e.g. trees over 50 centimetres diameter at breast height (DBH)) should be avoided to retain habitat for fauna species and to protect the essential root systems of vegetation along the bank which will reduce the risk of erosion and land degradation. The applicant have outlined in the project's Mining Proposal that there will be a setback of 2 metres from the drip line of significant strands of fringing vegetation within the watercourse and adjacent to the watercourse (Landform Research, 2021b).

#### Conclusion

Based on the above assessment, the proposed clearing has the potential to adversely impact land and water resources if avoidance, mitigation and management measures aren't implemented.

For the reasons set out above, it is considered that the impacts of the proposed clearing on land and water resources can be managed with conditions to be environmentally acceptable

#### 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;
- no clearing of significant trees (those with a DBH of 50 centimetres or more); and
- avoid impacts to riparian vegetation where practicable and maintain surface water flow.

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

The clearing permit application was advertised on 12 August 2022 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 (WCD2007/003 - Ngarla and Ngarla #2 (Determination Area A)) over the area under application (DPLH, 2022). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group (Wanparta Aboriginal Corporation RNTBC). 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, however a small grinding grove was recorded near the river resource but has been excluded from the disturbance footprint (DPLH, 2022; Landform Research, 2021b). 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 Mining Proposal approved under the *Mining Act 1978*.

Comment was received from the Town of Port Hedland with concerns regarding clearing of riparian vegetation and dust as a result from clearing and vehicle type/frequency haulage. Queries regarding vehicle type/frequency and haulage were directing to the proponent and concerns regarding dust and riparian vegetation have been taken into consideration in this decision report.

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**

## Appendix A. Site characteristics

### A.1. Site characteristics

Characteristic	Details
Local context	The application area is located approximately 27 kilometres south east of Port Hedland. The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. The proposed sand operation is adjacent to and within Petermarer Creek and is surrounded by a number of mining and quarry operations (GIS Database). The area is also used for recreational activities such as off road driving, camping and hunting (Ecotec, 2018).
Ecological linkage	According to available databases, the application area does not contain any known or mapped ecological linkages.
Conservation areas	There are no conservation areas located within the application area (GIS Database). The closest conservation area is the Leslie (Port Hedland) Saltfields system, a Nationally Important Wetland, located approximately 10 kilometres north of the application area (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation association/s:</p> <p>93: Hummock grassland, shrub steppe; kanji over soft spinifex; and          619: Medium woodland; river gum (<i>Eucalyptus camaldulensis</i>) (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by Ecotec during November, 2018. The following vegetation associations were recorded within the application area (Ecotec, 2018):</p> <p>W07: <i>Corymbia flavescens</i> very open low woodland over <i>Melaleuca linophylla</i> and <i>M. ?lasiandra</i> very open shrubland over scattered grasses and herbaceous species;</p> <p>W08: <i>Corymbia flavescens</i> sparse low woodland over <i>Acacia trachycarpa</i>, <i>A. pyrifolia</i> and <i>A. ancistrocarpa</i> very open shrubland over <i>Cenchrus ciliaris</i> dense grassland and herbaceous species;</p> <p>W09: <i>Corymbia flavescens</i> and <i>C. hamersleyana</i> very open low woodland over <i>Hakea lorea</i> and <i>Acacia tumida</i> very open low shrubland over <i>Triodia epactia</i> and various herbaceous species;</p> <p>W10: <i>Acacia colei</i> var <i>colei</i> and <i>A. trachycarpa</i> open shrubland over <i>Cenchrus ciliaris</i> dense grassland and herbaceous species;</p> <p>W11: <i>Acacia colei</i> var <i>colei</i> and <i>A. trachycarpa</i> sparse shrubland over <i>Acacia stellaticeps</i> low open shrubland <i>Cenchrus ciliaris</i> and <i>Triodia epactia</i> grassland and various herbaceous species;</p> <p>W12/W13: Isolated <i>Corymbia flavescens</i> and <i>C. hamersleyana</i> low trees over <i>Acacia colei</i> var <i>colei</i> and <i>A. inaequilatera</i> very open low shrubland over <i>Triodia epactia</i> open hummock grassland and scattered herbaceous species;</p> <p>W14/W15: Isolated <i>Corymbia flavescens</i>, <i>C. hamersleyana</i> and <i>C. zygophylla</i> low trees over <i>Acacia ancistrocarpa</i>, <i>A. colei</i> var <i>colei</i> and <i>A. inaequilatera</i>, <i>A. orthocarpa</i> very open low shrubland over <i>Triodia epactia</i> open hummock grassland and scattered herbaceous species;</p> <p>W16/W17: <i>Corymbia zygophylla</i> sparse low trees over <i>Acacia ancistrocarpa</i>, <i>A. colei</i> var <i>colei</i>, <i>A. inaequilatera</i>, <i>A. orthocarpa</i>, <i>A. stellaticeps</i> and <i>A. tumida</i> var. <i>pilbarensis</i> sparse low shrubland over <i>Triodia epactia</i> open hummock grassland and scattered herbaceous species;</p> <p>W18: <i>Corymbia zygophylla</i> sparse low trees over <i>Acacia ancistrocarpa</i>, <i>A. colei</i> var <i>colei</i>, <i>A. orthocarpa</i>, <i>A. stellaticeps</i>, <i>A. trachycarpa</i> and <i>A. tumida</i> var. <i>pilbarensis</i> sparse low shrubland over <i>Triodia epactia</i> open hummock grassland and herbaceous species;</p> <p>W19: Isolated <i>Acacia ancistrocarpa</i>, <i>A. inaequilatera</i>, <i>A. orthocarpa</i>, <i>A. stellaticeps</i> and <i>A. tumida</i> var. <i>pilbarensis</i> shrubs over <i>Acacia adoxa</i> var. <i>subglabra</i> very open low shrubland, <i>Triodia epactia</i> open hummock grassland and scattered herbaceous species;</p> <p>W20: <i>Acacia ancistrocarpa</i> tall shrubland over <i>A. stellaticeps</i> and <i>A. tumida</i> var. <i>pilbarensis</i> low open shrubland over <i>Triodia epactia</i> and <i>Cenchrus ciliaris</i> open hummock grassland; and</p> <p>W21: <i>Corymbia zygophylla</i> very open low woodland over <i>Acacia ancistrocarpa</i> and <i>A. inaequilatera</i> open low shrubland over <i>Acacia stellaticeps</i> sparse low shrubland and <i>Triodia epactia</i> open hummock grassland with scattered herbaceous species.</p>

Characteristic	Details
Vegetation condition	The vegetation survey indicate the vegetation within the proposed clearing area is in "Good" to "Very Good" (Keighery, 1994) condition, described as:  The full Keighery (1994) condition rating scale is provided in Appendix C.
Climate and landform	The climate in the proposed area is characterised by very hot summers, mild winters and low and variable rainfall, with an average annual rainfall of 317.7 millimetres (BoM, 2022).
Soil description	The soils of the application area are broadly mapped as the following soils: <ul style="list-style-type: none"> <li>• 281Ri: River System. Narrow, seasonally active flood plains and major river channels supporting moderately close, tall shrublands or woodlands of acacias and fringing communities of eucalypts sometimes with tussock grasses or spinifex, and</li> <li>• 281Ua: Uaroo System. Broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs</li> </ul>
Land degradation risk	The proposed area is located in the Uaroo land system and the river land system (GIS Database). The Uaroo land system consists of broad sandy plains supporting shrubby hard and soft spinifex grasslands (GIS Database). The majority of the soil is red sandy earths and red loamy earths with a sandy surface grading to loam or clay by 80 centimetres and deep red loamy surfaced soils often grading to heavier textures (Van Vreeswyk et al., 2004). The River land system consists of active flood plains, major rivers and banks supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands (Van Vreeswyk et al., 2004). The system is largely stabilised by buffel grass and spinifex, and may be susceptible to erosion if vegetative cover is removed (Van Vreeswyk et al., 2004).
Waterbodies	The desktop assessment and aerial imagery indicated that one minor, non-perennial watercourse transects the area proposed to be cleared, the Petermarer Creek (GIS Database). The Petermarer Creek is an ephemeral drainage line, streamflow is predominately a direct response to rainfall and it flows toward the De Grey delta and Leslie Saltfields System, northeast of Port Hedland (Ecotec, 2018).
Hydrogeography	The proposed area is located within a Pilbara Groundwater Area under the <i>Rights in Water and Irrigation Act 1914</i> (GIS Database).
Flora	The desktop assessment conducted by Ecotec identified 153 species of flora as having been previously recorded in a 20 kilometre radius of the proposed area (Ecotec, 2018). A total of 49 species of flora from 16 families were recorded during the survey (Ecotec, 2018). Based on suitable habitat and likelihood of presence within the application area, five conservation significant flora species may occur within the proposed area (Ecotec, 2018; GIS Database).  Two introduced flora species were recorded within the application area: <i>Cenchrus ciliaris</i> (Buffel grass) and <i>Calotropis procera</i> (Caltrope) (Ecotec, 2018). <i>Cenchrus ciliaris</i> was recorded along the banks of the creek and dominates the understory in much of this area (Ecotec, 2018). This species is preferential cow fodder and its seed dispersal is predominately by surface water flow (Ecotec, 2018). <i>Calotropis procera</i> , is a declared agricultural pest species in Western Australia and was recorded in the north western corner of the application area but is expected to be present along the length of the creel (Ecotec, 2018).
Ecological communities	There are no records of any Threatened or Priority Ecological Communities (TEC/PEC) within the application area (GIS Database).
Fauna	The desktop assessment conducted by Ecotec identified 309 species of fauna as having been previously recorded in a 20 kilometre radius of the proposed area (Ecotec, 2022). Three main habitats were recorded within the application area: sand plain, ephemeral drainage line and rocky outcrop (Ecotec, 2018). Based on suitable habitat and likelihood of presence within the application area, sixteen conservation significant fauna species may occur within the proposed area (Ecotec, 2018; GIS Database).

## A.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	17,808,657.04	17,731,764.88	99.57	1,801,714.98	10.12
Beard vegetation associations - State					

Veg Assoc No. 93	3,044,309.52	3,040,640.98	99.88	59,536.96	1.96
Veg Assoc No. 619	119,373.78	118,205.01	99.02	236.34	0.20
Beard vegetation associations - Bioregion					
Veg Assoc No. 93	3,042,114.27	3,038,471.67	99.88	59,536.96	1.96
Veg Assoc No. 619	118,920.31	118,116.78	99.32	236.08	0.20

Government of Western Australia (2019)

### A.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix D.1), and biological survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)
<i>Eragrostis crateriformis</i>	P3	Y	0.58
<i>Euploca mutica</i>	P3	Y	0.87
<i>Rothia indica subsp. australis</i>	P3	Y	11.5
<i>Triodia chichesterensis</i>	P3	Y	19.4
<i>Bonamia oblongifolia</i>	P3	Y	180

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

### A.4. Fauna analysis table

Species name	Common Name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)
<i>Dasyurus hallucatus</i>	Northern quoll	EN	N	Recorded within application area
<i>Charadrius mongolus</i>	Lesser sand plover	EN	Y	~18
<i>Macroderma gigas</i>	Ghost bat	VU	N	~3
<i>Rhinonictis aurantia</i> (Pilbara)	Pilbara leaf-nosed bat	VU	N	~3.5
<i>Falco hypoleucos</i>	Grey falcon	VU	Y	~12
<i>Dasyercus blythi</i>	Brush-tailed mulgara	P4	Y	~15
<i>Phalaropus lobatus</i>	Red-necked phalarope	MI	Y	~5
<i>Calidris subminuta</i>	Long-toed stint	MI	Y	~6
<i>Glareola maldivarum</i>	Oriental pratincole	MI	Y	~3
<i>Chlidonias leucopterus</i>	White-winged black tern, white-winged tern	MI	Y	~17
<i>Calidris ruficollis</i>	Red-necked stint	MI	Y	~12
<i>Hydroprogne caspia</i>	Caspian tern	MI	Y	~15
<i>Numenius minutus</i>	Little curlew, little whimbrel	MI	Y	~20
<i>Pandion cristatus</i>	Osprey, eastern osprey	MI	Y	~1.3
<i>Tringa nebularia</i>	Common greenshank, greenshank	MI	Y	~18
<i>Xenus cinereus</i>	Terek sandpiper	MI	Y	~18

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, 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> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The application area largely comprises of <i>Triodia</i> (spinifex) hummock grassland which dominates the sand plain areas. <i>Corymbia</i> very open low woodlands with <i>Acacia</i> shrubland was recorded predominantly along the creek and drainage channels with variations of the <i>Acacia</i> shrubland vegetation located throughout the survey area (Ecotec, 2018).</p> <p>Flora and fauna surveys did not identify any threatened or priority flora or fauna or ecological communities within the application (Ecotec, 2018). The flora and vegetation survey recorded 49 species of flora within the application area (Ecotec, 2018). The application area is therefore not likely to contain a high level of biodiversity. However, the proposed clearing may increase the risk of weeds spreading into adjacent native vegetation and may be minimised by the implementation of a weed management condition.</p>	Not likely to be at variance	No
<p><u>Principle (b):</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 significant habitat for fauna.”</i></p> <p><u>Assessment:</u></p> <p>No fauna habitats of conservation were recorded within the application area. Sixteen species of conservation significant fauna may potentially utilise the habitat within the application area, however, the application area is not likely to represent significant habitat for the species (Ecotec, 2018).</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1 above.</i>
<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>Based on the habitat present and historical records of conservation significant flora, five species of conservation significant flora could potentially occur within the application area. However, there are no known records of conservation significant flora within the application area (GIS Database). The vegetation and flora survey also did not record any species of conservation significant flora within the application area (Ecotec, 2018).</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 permit area (GIS Database). The flora and vegetation survey did not identify any TECs (Ecotec, 2018).</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 extent of native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. 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

Assessment against the clearing principles	Variance level	Is further consideration required?
<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>Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not 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>As the project proposes to excavate the sand and coarser pebbly material from the alluvial deposits of the Petermarer Creek and the adjoining areas set back from the river bank, the occasional small <i>Corymbia</i> and <i>Acacia</i> located within the bed of the river will need to be cleared (Landform Research, 2021b). Excavation methods have been designed so vegetation on the banks will not be impacted and neither will the integrity of the banks (Landform Research, 2021b).</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></p> <p>The mapped soils are moderately susceptible to wind / water erosion. Noting the location of the application area, the proposed clearing is likely to have an appreciable impact on land degradation. Potential degradation as a result of the proposed clearing may be minimised by implementation of a watercourse and vegetation management condition.</p>	May 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>There are no permanent watercourses or wetlands within the application area (GIS Database). Petermarer creek is an ephemeral creek with streamflow related to intense rainfall from cyclonic activity or localised thunderstorms (Landform Research, 2021a). Project activities are not expected to cause deterioration in the quality of surface or underground water as sand extraction is only undertaken when the creek bed is dry.</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 semi-arid, with an average rainfall of approximately 317.7 millimetres (BoM, 2022). The non-perennial watercourse that intersects the application area, Petermarer Creek, remains dry for most of the year with most flows occurring after cyclonic rains (Landform Research, 2021a). 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 Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

#### Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the 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)):

- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Bush Forever (Regional Scheme) (DPLH-022)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- 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)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Native Title (ILUA) (LGATE-067)
- 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:

- Black Cockatoo WTBC Breeding
- Black Cockatoo FRTBC Breeding

- Black Cockatoo BC Roosts
- Black Cockatoo BC Feeding SCP
- Black Cockatoo Feeding JF
- Black Cockatoo Feeding Areas Buffered
- Black Cockatoo Baudins Distribution
- Black Cockatoo Forest Red Tail Distribution
- Black Cockatoo Carnabys Distribution
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)
- Western Ringtail Possum Habitat Suitability (DBCA-049)

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## 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>DAWE</b>	Department of Agriculture, Water and the Environment, Australian Government
<b>DBCA</b>	Department of Biodiversity, Conservation and Attractions, Western Australia
<b>DER</b>	Department of Environment Regulation, Western Australia (now DWER)
<b>DMIRS</b>	Department of Mines, Industry Regulation and Safety, Western Australia
<b>DMP</b>	Department of Mines and Petroleum, Western Australia (now DMIRS)
<b>DoEE</b>	Department of the Environment and Energy (now DAWE)
<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.