



# Clearing Permit Decision Report

## 1. Application details and outcomes

### 1.1. Permit application details

<b>Permit number:</b>	9763/1
<b>Permit type:</b>	Purpose Permit
<b>Applicant name:</b>	Mineral Search Pty Ltd
<b>Application received:</b>	6 June 2022
<b>Application area:</b>	13.825 hectares
<b>Purpose of clearing:</b>	Gypsum extraction and associated activities
<b>Method of clearing:</b>	Mechanical Removal
<b>Tenure:</b>	Mining Lease 70/1405 Miscellaneous Licence 70/228
<b>Location (LGA area/s):</b>	Shire of Lake Grace
<b>Colloquial name:</b>	Lake Kathleen project

### 1.2. Description of clearing activities

Mineral Search Pty Ltd proposes to clear up to 13.825 hectares of native vegetation within a boundary of approximately 13.825 hectares, for the purpose of gypsum extraction and an associated laydown area and access road. The project is located approximately 9 kilometres north of Lake King, within the Shire of Lake Grace.

The application was originally for 10 hectares of clearing however, it was amended during the assessment to include additional areas on Mining Lease 70/1405.

### 1.3. Decision on application and key considerations

<b>Decision:</b>	Grant
<b>Decision date:</b>	15 November 2022
<b>Decision area:</b>	13.825 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 6 June 2022. DMIRS advertised the initial application for a public comment for a period of 21 days, and no submissions were received. During the course of the assessment, the application area was increased and the application advertised for an additional period of 21 days.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix E), supporting information provided by the applicant including the results of a flora and vegetation survey (Appendix D), 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;
- impacts to conservation significant flora; and
- potential land degradation in the form of wind and water 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;
- commence construction no later than one month after undertaking clearing to reduce the risk of erosion; and
- undertake targeted searches for Priority flora prior to undertaking any clearing.

## 1.5. Site map

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

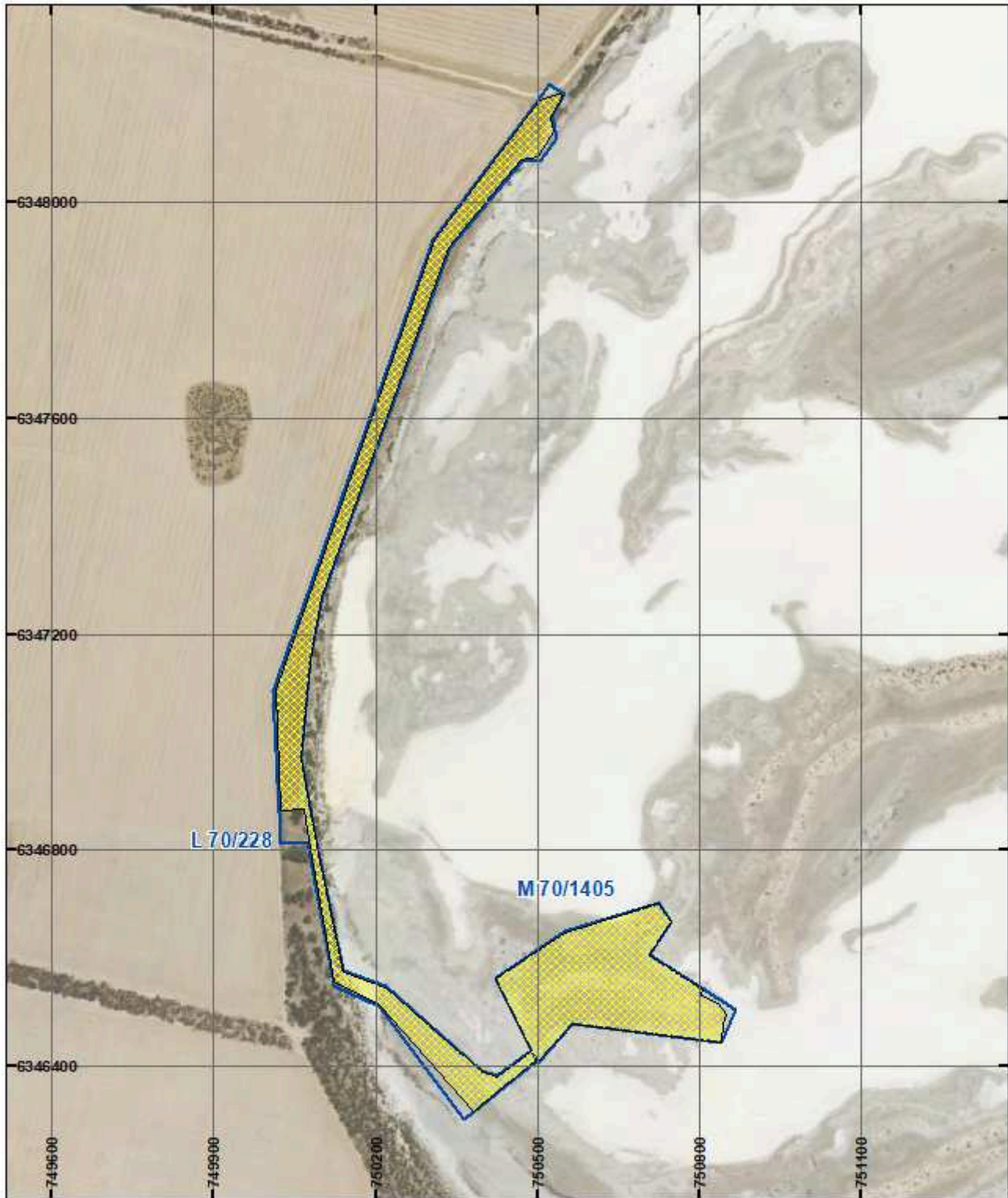


Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit.

## 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

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. No large trees will be removed and the application area has been designed to avoid clearing areas of vegetation where possible.

#### 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, flora and vegetation), and land resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

##### 3.2.1. Biological values flora - Clearing Principles (a), (c) and (d)

###### Assessment

###### **Threatened and Priority Flora**

There are 62 flora species of conservation significance which have been recorded in the local area (20 kilometres) (GIS Database). Based on the habitat present, there were 27 species which are considered to possibly be within the application area (Rick, 2017; Western Australian Herbarium, 1998-; GIS Database). The application area has two distinct soil types; areas of gypsum soils associated with the vegetation on the lake itself and sand and sandy loam soils in the areas on the fringes of the lake (Rick, 2017). The area of the proposed road on the fringe of the lake has been located to avoid large trees. This area is adjacent to existing agricultural land and is sparsely vegetated (GIS Database). It is also likely to contain an increased number of weed species. The area for the proposed road is not likely to represent significant habitat for conservation significant flora species. There were 14 species which have been identified as being either a gypsophile or gypsum tolerant (Rick, 2017). The flora survey recorded a population of the Priority 2 species *Fitzwillia axilliflora* within the proposed mining area (see Figure 2). This species was found at the western end of a dune within the 'mixed species shrubland' vegetation association (Rick, 2017). There were four populations and 5 sub populations recorded over Lake Kathleen during the flora survey (Rick, 2017). This is the first time that this species has been recorded from the Lake King salt lake chain representing a range extension to the east (Rick, 2017; GIS Database). This species has a large range (over 550 kilometres) with records from Burrillgabby Lake in the north to Lake Magenta in the south (GIS Database). It is thought that this species is gypsum tolerant as it has also been found growing in non-gypsum soils (Rick, 2011). Counts of individuals were not undertaken as part of the survey. The applicant has committed to undertaking further surveys prior to clearing and avoiding any locations of *Fitzwillia axilliflora* within the permit area (Mineral Search, 2021).

There was a specimen recorded during the flora survey which was similar to *Calandrinia wilsonii* (Priority 2) (Rick, 2017). Further identification work concluded that these specimens were actually the *Calandrinia* sp. Gypsum (Mineral Search, 2021).

The proposed clearing may impact on habitat for the other species of Priority flora which grow on gypsum soils. There are suitable areas of habitat present across Lake Kathleen and the proposed clearing will only remove approximately 8.3 hectares of the Co, Hm and Te vegetation units associated with gypsum soils (Rick, 2017; GIS Database).

###### **Weeds**

Seven species of weeds were recorded during the greater field survey of the application area and surrounding areas (Rick, 2017). None were listed as a Declared Pest according to the *Biosecurity and Agriculture Management Act 2007*. Parts of the application area are located adjacent to agricultural areas and are likely to have a higher level of weeds. Weeds have the potential to out-compete native flora and reduce the biodiversity of an area. Potential impacts to biodiversity as a result of the introduction of weeds may be minimised by the implementation of a weed management condition.

## Ecological Communities

The fringing vegetation on the eastern shore of Lake Kathleen has been mapped as the 'Eucalypt Woodlands of the Western Australian Wheatbelt' Threatened Ecological Community (TEC) (GIS Database). This TEC is a listed threatened ecological community under the *EPBC Act 1999* is listed as a Priority Ecological Community in Western Australia. The application area includes the vegetation association *Eucalyptus salubris* woodland (Rick, 2017). *Eucalyptus salubris* is identified as an indicator canopy species for the TEC (Department of the Environment, 2015). The only clearing of the potential TEC will be for the construction of the road which is located at the mapped extremity of the community. It has very little understorey and the trees are sparsely located. The application area has been designed to avoid clearing of the trees within the *Eucalyptus salubris* woodland (see Figure 2) and is not likely to clear vegetation representative of the TEC.



Figure 2. Application area (area shown in blue) where the road crosses the area of fringing vegetation.

### Conclusion

Based on the above assessment, the proposed clearing will result in clearing of habitat for priority flora species, in particular for *Fitzwillia axilliflora*. The proposed clearing will only remove a small portion of available habitat at Lake Kathleen however, given this species has not previously been recorded in the Lake King salt lake chain, clearing of these individuals should be avoided.

It is considered that the impacts of the proposed clearing on Priority flora can be managed by a condition requiring further searches are done prior to clearing and any Priority flora are avoided.

### Conditions

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

- A flora management condition requiring targeted searches are undertaken prior to clearing and any records of Priority flora are avoided.
- Take hygiene steps to minimise the risk of the introduction and spread of weeds.

### 3.2.2. Biological values fauna - Clearing Principles (a), (b) and (e)

#### Assessment

No fauna surveys have been undertaken over the application area. Based on the vegetation mapped during the flora survey (Rick, 2017) and aerial imagery there are four broad fauna habitats within the application area; low shrubland on Lake Kathleen, *Casuarina obesa* open woodland, *Meleuca* shrubland on the fringes of Lake Kathleen and sparse *Eucalyptus salubris* woodland. The application area has been designed to avoid clearing large trees within *Eucalyptus salubris* woodland. This habitat is located adjacent to cleared agricultural land and is sparsely vegetated and is likely to contain a high level of weeds (GIS Database). This

habitat is not likely to be significant habitat for any fauna species. The low shrubland on Lake Kathleen covers a significant portion of the lake (Rick, 2017). This habitat may provide shelter for smaller species such as reptiles, small mammals and insects however, it would not be important habitat for any larger animals. The vegetation is part of a larger remnant of vegetation surrounding Lake Kathleen (see Figure 3) (GIS Database). The vegetation within the application area is not likely to act as an ecological link between remnants. The area for the proposed road on the western border of the lake is very sparsely vegetated (see Figure 4) and is not likely to contribute towards any ecological linkage. The clearing of the other vegetation on the lake is not likely to have a significant impact on the remnants ability to support fauna species which utilise the area.

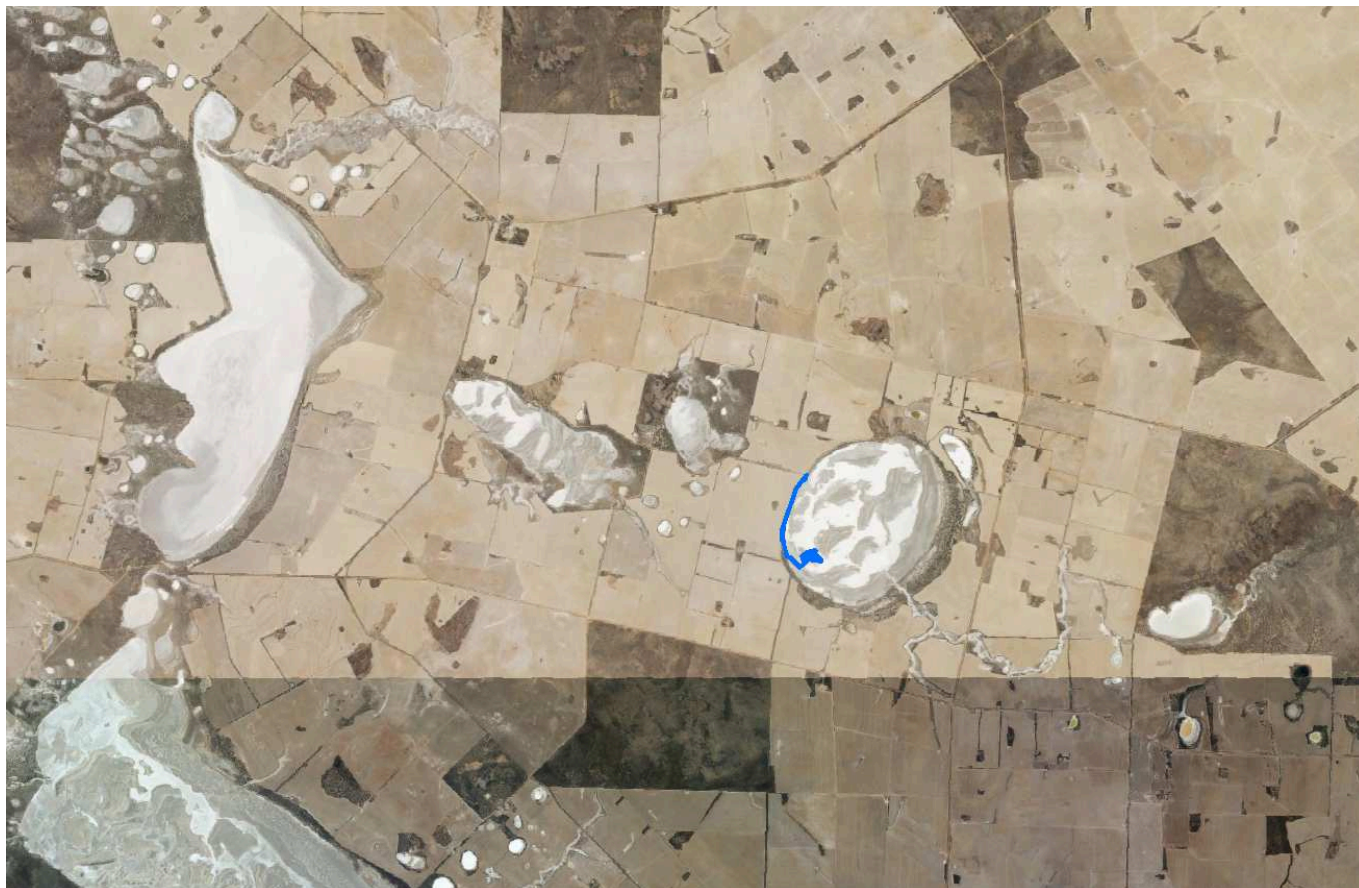


Figure 3: Application area (shown in blue) in a local context.

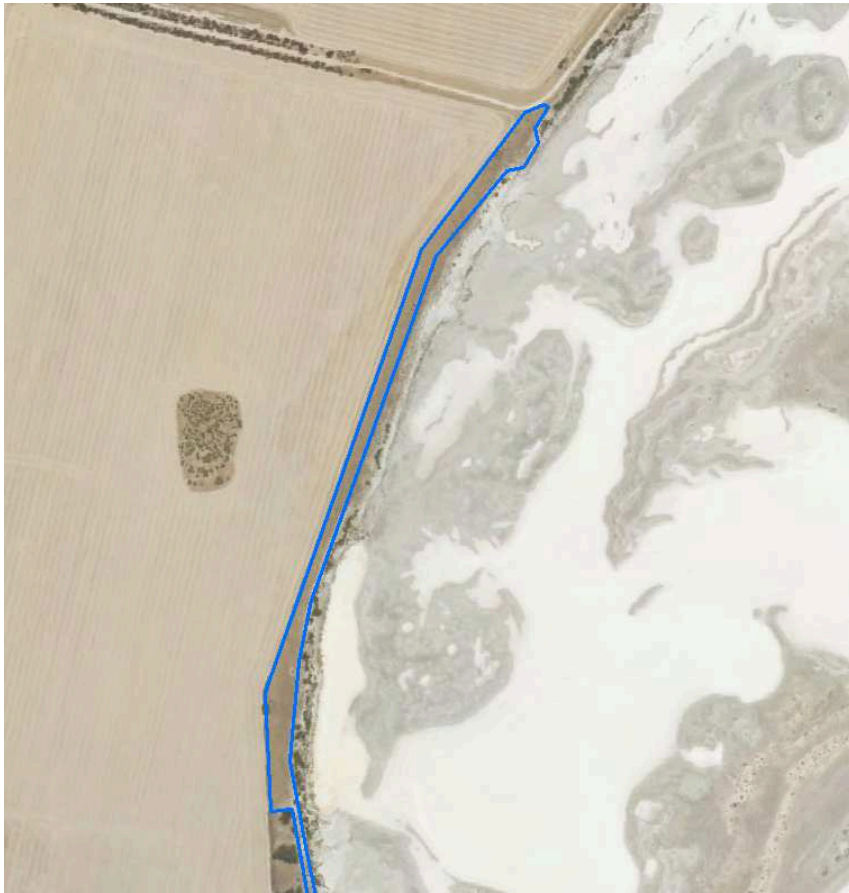


Figure 4: Area of proposed access road (application area shown in blue).

There are four conservation significant fauna species which have been recorded in the local area (20 kilometre radius) (GIS Database). Based on the vegetation type present, the application area is not likely to be core habitat for these species. Carnaby's Cockatoo has been recorded in the local area however, there is no suitable breeding or roosting present within the application area (GIS Database). The *Melaleuca* shrubland that occurs within the access track portion of the application area may provide some foraging species for these birds, given that suitable breeding habitat may occur within the nearby eucalypt woodlands (GIS Database). Only a small amount of this vegetation will be cleared (less than one hectare) and it is not likely to be significant habitat for Carnaby's Cockatoos in the local area.

The most frequently recorded species in the local area is the Malleefowl and Hooded Plover (GIS Database). There are no habitats within the application area which are likely to provide suitable shelter for the Malleefowl or areas within sufficient leaf litter for creating nests. The Hooded Plover are likely pass through the application area to utilise Lake Kathleen when inundated, however the vegetation is not likely to represent significant habitat. The proposed clearing within the lakebed will be undertaken when the lake is dry. The Western Brush Wallaby may pass through the application area however, given the majority of the area does not contain suitable shelter, it is not likely to represent significant habitat for this species.

#### Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on fauna habitat within the application area is not likely to have a significant impact to fauna species in the local area.

#### Conditions

No specific fauna management conditions are required on the permit to address impacts to fauna.

### 3.2.3. Land resources - Clearing Principle (g)

#### Assessment

The majority of the surface of Lake Kathleen is devoid of significant vegetation and is naturally prone to wind erosion (DPIRD, 2022). The removal of remaining vegetation will increase the wind erosion hazard and will possibly result in an increased dust load during high wind events if the land surface is dry at the time (DPIRD, 2022). Cleared areas on gypsum can be effectively managed by wetting the surface to generate a surface crust which will develop further following additional rainfall events (DPIRD, 2022). The area of the access road which is not on gypsum soils can only be effectively managed by regular watering the surface to generate a crust as this crust will be destroyed by vehicular traffic (DPIRD, 2022).

The land that abuts the western edge of the lake shore is highly erodible because it comprises saline and sodic soil on a significant gradient making it prone to water erosion by natural swash processes (DPIRD, 2022). The removal of native vegetation along this shoreline is likely to increase the water erosion hazard (DPRID, 2022). Fresh water flowing over the bare surface of these soils on a gradient will likely increase erosion which may initiate gullying (DPIRD, 2022). This will increase the deposition of materials within the lake bed.

### Conclusion

The proposed clearing has the potential to increase the risk of wind and water erosion within application area. The risks can be reduced but require active management during the operation of mining activities to prevent excess erosion. Activities undertaken during mining operations which are not related to clearing are managed under the *Mining Act 1978*. Both of the tenements have a condition on them requiring the holder to take all reasonable and practicable measures to prevent or minimise the generation of dust from mining operations. Conditions can also be placed on the permit to minimise the risk of erosion. Provided steps are implemented to minimise the risk of erosion, the proposed clearing can be considered acceptable.

### Conditions

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

- A staged clearing condition to ensure that areas are utilised within 1 month of clearing to reduce the risk of erosion.

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

The clearing permit application was advertised on 29 July 2022 and 21 October 2022 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

The permit area is within the South West Native Title Settlement area (DPLH, 2022). This settlement resolves Native Title rights and interests over an area of approximately 200,000 square kilometres within the south west of Western Australia. The mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance within the application area (DPLH, 2022). 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 / Mine Closure Plan approved under the *Mining Act 1978*.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

**End**

## Appendix A. Site characteristics

### A.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of a remnant patch of native vegetation in the intensive land use zone of Western Australia. The remnant is situated on the fringes of Lake Kathleen and is surrounded by cleared agricultural land and areas of bare salt lake.</p> <p>Spatial data indicates the local area (20 kilometre radius from the centre of the area proposed to be cleared) retains approximately 25.8 per cent of the original native vegetation cover (GIS Database).</p>
Ecological linkage	<p>The application area is located within a remnant of vegetation surrounding Lake Kathleen. Lake Kathleen forms part of a chain of salt lakes in the area however there are large cleared areas between the lakes which would impede the movement of smaller less mobile species. Larger and more mobile species may utilise the area as a linkage through the landscape.</p>
Conservation areas	<p>The closest conservation area is the Kathleen Nature Reserve which is located approximately two kilometres south of the permit area (GIS Database).</p>
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations: 125: Bare areas; salt lakes; and 519: Shrublands; mallee scrub, <i>Eucalyptus eremophila</i> (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by Anne Rick during November, 2017. The following vegetation associations were recorded within the application area (Rick, 2017):</p> <p>Es: <i>Eucalyptus salubris</i> woodland; Hm: Mixed species shrubland; Co: <i>Casuarina obesa</i> open woodland; Me: <i>Melaleuca</i> shrubland; and Te: <i>Tecticornia</i> (samphire) shrubland.</p>
Vegetation condition	<p>The vegetation survey and aerial imagery indicate the vegetation within the proposed clearing area is in excellent to degraded condition (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>
Climate and landform	<p>The application area is relatively flat and is mapped at an elevations of 320 metres AHD. The annual average rainfall (Hyden) is 340.2 millimetres (BoM, 2022).</p>
Soil description	<p>The soils within the application are have been mapped as 250La_1lf and 250La_1sl. The soil mapped as 250La_1lf is described as lunettes, dunes and swales associated with salt lakes within the Lagan 1 subsystem. Soils are mainly saline loams and clays, calcareous loamy earths, salt lake soils and some sandy lunettes (DPIRD, 2022). The soil mapped as 250La_1sl is described as large seasonally dry salt lakes within the Lagan 1 subsystem, consisting of saline and gypsiferous clay and silts (DPIRD, 2022).</p>
Land degradation risk	<p>The site is naturally prone to wind erosion as a high proportion of its surface is devoid of significant vegetation (DPIRD, 2022). The western shore of the lake is also prone to water erosion by natural swash process (DPIRD, 2022).</p>
Waterbodies	<p>Part of the application area sits within Lake Kathleen which is a non-perennial lake (GIS Database).</p>
Hydrogeography	<p>The application area is not within any public drinking water source areas. The mapped groundwater salinity ranges from 14,000 to greater than 35,000 milligrams per litre total dissolved solids which is described as hypersaline (GIS Database).</p>
Flora	<p>There are no previous records of Threatened or Priority flora within the application area (GIS Database). Flora surveys undertaken by Rick (2017) recorded the Priority flora species <i>Fitzwillia axilliflora</i> within the application area.</p>
Ecological communities	<p>There are no records of any Threatened or Priority Ecological Communities (TEC/PEC) within the application area (GIS Database). There is a known TEC from the banks of Lake Kathleen (GIS Database).</p>
Fauna	<p>According to available databases, four species of conservation significant fauna species have been recorded within the local area (GIS Database). The most frequently recorded species is the Malleefowl and Hooded Plover.</p>



## 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 - Mallee	7,395,894	4,180,938	~56.53	1,289,384	18.03
IBRA Subregion - Western Mallee	3,981,718	1,471,048	~36.95	364,866	10.03
Local Government - Shire of Lake Grace	1,188,460	456,516	~38.41	182,116	16.98
Beard vegetation associations - State					
125	3,485,785	3,146,487	~90.27	265,740	9.29
519	2,333,414	1,440,062	~61.71	244,096	10.54
Beard vegetation associations - Bioregion					
125	160,327	107,845	~67.27	25,031	26.79
519	2,100,314	1,248,661	~59.45	225,928	10.85
Beard vegetation associations - subregion					
125	81,605	31,802	~38.97	18,448	43.98
519	1,563,571	783,034	~50.08	196,334	12.68

Government of Western Australia (2019)

## A.3. Flora analysis table

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

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
<i>Adenanthos gracilipes</i>	Priority 3	Y	Y	Y	<20	Y
<i>Angianthus halophilus</i>	Priority 3	Y	Y	Y	<15	Y
<i>Austrostipa geoffreyi</i>	Priority 2	Y	Y	Y	<15	Y
<i>Drosera salina</i>	Priority 2	Y	Y	Y	<20	Y
<i>Eremophila serpens</i>	Priority 4	Y	Y	Y	<10	Y
<i>Eremophila subteritifolia</i>	Threatened	Y	Y	Y	<10	Y
<i>Eucalyptus exigua</i>	Priority 3	Y	Y	Y	<5	Y
<i>Eucalyptus mimica subsp. mimica</i>	Priority 3	Y	Y	N	<20	Y
<i>Eucalyptus quaerenda</i>	Priority 3	Y	Y	Y	<20	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
<i>Fitzwillia axilliflora</i>	Priority 2	Y	Y	Y	0	Y
<i>Frankenia drummondii</i>	Priority 3	Y	Y	Y	<5	Y
<i>Frankenia sp. southern gypsum (M.N. Lyons 2864)</i>	Priority 3	Y	Y	Y	<15	Y
<i>Goodenia integerrima</i>	Threatened	Y	Y	Y	<15	Y
<i>Goodenia salina</i>	Priority 2	Y	Y	Y	<15	Y
<i>Haegiela tatei</i>	Priority 4	Y	Y	Y	<15	Y
<i>Hydrocotyle decorata</i>	Priority 2	Y	Y	Y	<5	Y
<i>Hydrocotyle eichleri</i>	Priority 2	Y	Y	Y	<15	Y
<i>Melaleuca sculponeata</i>	Priority 3	Y	Y	Y	<20	Y
<i>Millotia steetziana</i>	Priority 2	Y	Y	Y	<20	Y
<i>Olearia laciniifolia</i>	Priority 2	Y	Y	Y	<15	Y
<i>Pimelea halophila</i>	Priority 2	Y	Y	Y	<15	Y
<i>Pultenaea indira subsp. monstrosita</i>	Priority 3	Y	Y	Y	<20	Y
<i>Roycea pycnophylloides</i>	Threatened	Y	Y	Y	<20	Y
<i>Salicornia globosa</i>	Priority 3	Y	Y	Y	<20	Y
<i>Seorsus clavifolius</i>	Priority 2	Y	Y	Y	<20	Y
<i>Stylidium pulviniforme</i>	Priority 3	Y	Y	Y	<20	Y
<i>Tribonanthes minor</i>	Priority 3	Y	Y	Y	<20	Y

#### A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Western Brush Wallaby – <i>Notamacropus irma</i>	Priority 4	N	Y	10	3	N
Hooded Plover – <i>Thinornis rubricollis</i>	Priority 4	Y	Y	2	7	N
Malleefowl – <i>Leipoa ocellata</i>	Vulnerable	N	N	7	6	N
Carnaby's Cockatoo – <i>Zanda latirostris</i>	Endangered	N	N	17	2	N

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> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>There are records of the Priority flora species <i>Fitzwillia axilliflora</i> within the application area (Rick, 2017). There were seven species of weeds also recorded during the flora survey of Lake Kathleen which have the potential to lower the biodiversity value of the area (Rick, 2017). The vegetation within the application area is not likely to support a high level of faunal diversity.</p>	May be at variance	Yes <i>Refer to Sections 3.2.1, 3.2.2 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>There are records of four species of conservation significant fauna within the local area however, the vegetation is not likely to represent significant habitat for fauna species.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><u>Assessment:</u></p> <p>There are no known records of Threatened flora within the application area (GIS Database). There are records of five Threatened flora species within 20 kilometres of the application area (GIS Database). Based on the habitat present within the application area, <i>Eremophila subteretifolia</i>, <i>Goodenia integerrima</i> and <i>Roycea pycnophylloides</i> were considered possibly to be present.</p> <p>The flora survey over Lake Kathleen which included the application area did not record any species of Threatened flora (Rick, 2017).</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> "Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains species that can indicate a threatened ecological community listed under the federal <i>Environment Protection and Biodiversity Conservation Act 1999</i>.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> "Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."</p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation types (Beard vegetation associations 125, 519 and 519) are consistent with the national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia, 2001). The application area is located within a larger remnant of vegetation associated with Lake Kathleen however, the proposed clearing is not likely to not impact any ecological linkages or have a significant impact on this remnant.</p>	At variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (h):</u> "Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."</p> <p><u>Assessment:</u></p> <p>There are no conservation areas in the vicinity of the application area. The nearest DBCA managed land is the Kathleen Nature Reserve which is located approximately two kilometres south of the application area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: land and water resources</b>		
<p><u>Principle (f):</u> "Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."</p> <p><u>Assessment:</u></p> <p>The application area is located on the fringes of and within Lake Kathleen. The mixed species shrubland, <i>Casuarina obesa</i> open woodland and <i>Tecticornia</i> (samphire) shrubland vegetation associations were all mapped within Lake Kathleen. The proposed clearing will remove approximately 8.3 hectares of these vegetation communities. The proposed clearing is to facilitate the mining a gypsum dune, stockpiling areas and an access road. The clearing of this riparian vegetation is not expected to impact on the hydrological and biological functions of Lake Kathleen. Care should be taken when constructing the road to ensure that any surface flows are not impacted by the structure.</p> <p><u>Condition:</u></p> <p>Potential impacts to water resources and riparian vegetation as a result of the proposed activities may be minimised by the implementation of a watercourse management condition requiring that surface water flows are maintained.</p>	At variance	No
<p><u>Principle (g):</u> "Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."</p> <p><u>Assessment:</u></p> <p>The proposed clearing has the potential to increase the risk of wind and water erosion within the application.</p>	At variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (i):</u> "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."</p> <p><u>Assessment:</u></p> <p>The application area is located on Lake Kathleen. The water quality within the area is already highly saline (DPIRD, 2022). The proposed clearing of 13.825 hectares is unlikely to contribute to further salinity in the local area (DPRID, 2022).</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> "Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."</p> <p><u>Assessment:</u></p> <p>The application area is within a non-perennial salt lake. This salt lake floods intermittently and the removal of vegetation will not contribute to further flooding (DPIRD, 2022).</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.

Condition	Description
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. Photographs of the vegetation**

Representative photographs of the vegetation communities from the flora survey (Rick, 2017). The flora survey covered the greater Lake Kathleen area and the quality of the vegetation within the application area differs from these examples in some cases.



Photo 1: *Eucalyptus salubris* woodland.



Photo 2: Melaleuca shrubland



Photo 3: *Casuarina obesa* open woodland.

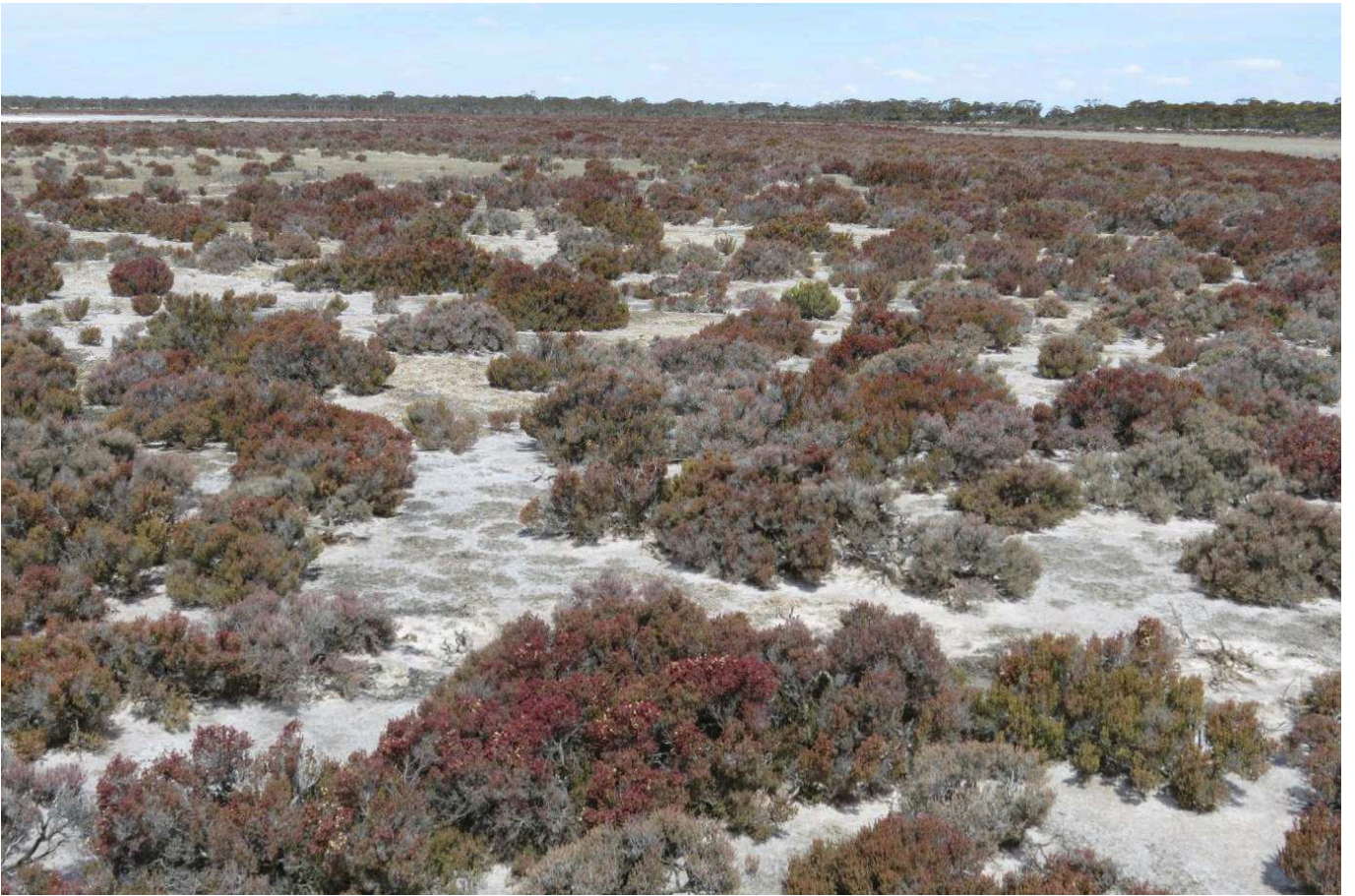


Photo 4: *Tecticornia* (Samphire) shrubland



Photo 5: Mixed species shrubland

### E.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)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- 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 Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- 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)

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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.