Department of Mines, Petroleum and Exploration

GOVERNMENT OF WESTERN AUSTRALIA

Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	6803/3
Permit type:	Purpose permit
Applicant name:	Karora (Higginsville) Pty Ltd
Application received:	15 May 2025
Application area:	739 hectares
Purpose of clearing:	Mineral exploration, mineral production, haul road and associated activities
Method of clearing:	Mechanical removal
Tenure:	Mining Lease 63/647
	Miscellaneous Licence 63/73
Location (LGA area):	Shire of Dundas
Colloquial name:	Musket Project

1.2. Description of clearing activities

Karora (Higginsville) Pty Ltd proposes to clear up to 739 hectares of native vegetation within a boundary of approximately 1,036 hectares, for the purpose of mineral exploration, mineral production, haul road and associated activities. The project is located approximately 30 kilometres North-east of Norseman, within the Shire of Dundas (GIS Database). To date, Karora have not undertaken any clearing of native vegetation under CPS 6803/2 (Karora (Higginsville) Pty Ltd, 2025b).

Clearing permit CPS 6803/1 was granted by the Department of Energy, Mines, Industry Regulation and Safety (now the Department of Mines, Petroleum and Exploration) on 3 December 2015 and was valid from 26 December 2015 to 31 December 2020. The permit authorised the clearing of up to 739 hectares of native vegetation within a boundary of approximately 1,036 hectares, for the purpose of mineral exploration, mineral production, haul road and associated activities.

CPS 6803/2 was granted on 15 October 2020, amending the permit to extend the duration of the permit to 31 December 2025. The area of clearing authorised and the permit boundaries remained unchanged.

On 15 May 2025 the permit holder applied to amend CPS 6803/2 to extend the permit duration to 31 December 2030 and update the permit holder from Avoca Mining Pty Ltd to Karora (Higginsville) Pty Ltd. The area of clearing authorised and the permit boundaries remained unchanged.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	23 December 2025
Decision area:	739 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed, and determined in accordance with sections 51KA(1) and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Mines, Petroleum and Exploration (DMPE) advertised the application for a public comment for a period of 7 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) and supporting information provided by the applicant (NVS, 2015; Terrestrial Ecosystems, 2015) including the results of a flora and vegetation survey (NVS, 2015), the clearing principles set out in Schedule 5 of the EP Act (Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3). The Delegated Officer also took into consideration the purpose of the clearing for mineral exploration, mineral production, haul road and associated activities.

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;

- potential impacts to conservation significant flora;
- the loss of native vegetation that is suitable habitat for malleefowl (*Leipoa ocellata*);
- potential impacts to arid bronze azure butterfly (*Ogyris petrina*); and
- potential impacts to inland hairstreak butterfly (*Jalmenus aridus*).

The assessment has not changed since the assessment for CPS 6803/2, except in the case of principles (a), (b) and (c). An assessment of current data shows that the application area provides suitable habitat for several conservation significant flora and fauna species that have been recorded in the surrounding areas. While previous surveys did not identify these species within the application area, these surveys were conducted in 2015 and in the intervening period these species may have established or utilised the application area.

The Delegated Officer determined that the proposed extension of the clearing permit duration is not likely to lead to an unacceptable risk to environmental values, and that the clearing permit shall be granted subject to the following conditions:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- vegetation management condition to avoid the clearing of riparian vegetation and minimise the impacts of clearing on existing surface flows;
- flora management condition to undertake a targeted flora survey prior to clearing areas that have not been surveyed within the past five years;
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- a fauna management (malleefowl) condition requiring areas proposed to be cleared between 1 September and 31 January are inspected to identify active (in use) malleefowl mounds, and to maintain a 200 metre buffer around identified active mounds;
- a fauna management (ABAB) condition requiring areas proposed to be cleared to be surveyed to identify potential critical habitat, ant colonies and ABAB individuals and no clearing within 100 metres of ant colonies; and
- a fauna management (inland hairstreak butterfly) condition requiring areas proposed to be cleared to be surveyed to identify potential critical habitat and inland hairstreak butterfly, and no clearing within 50 metres of associated host plants.

1.5. Site Map

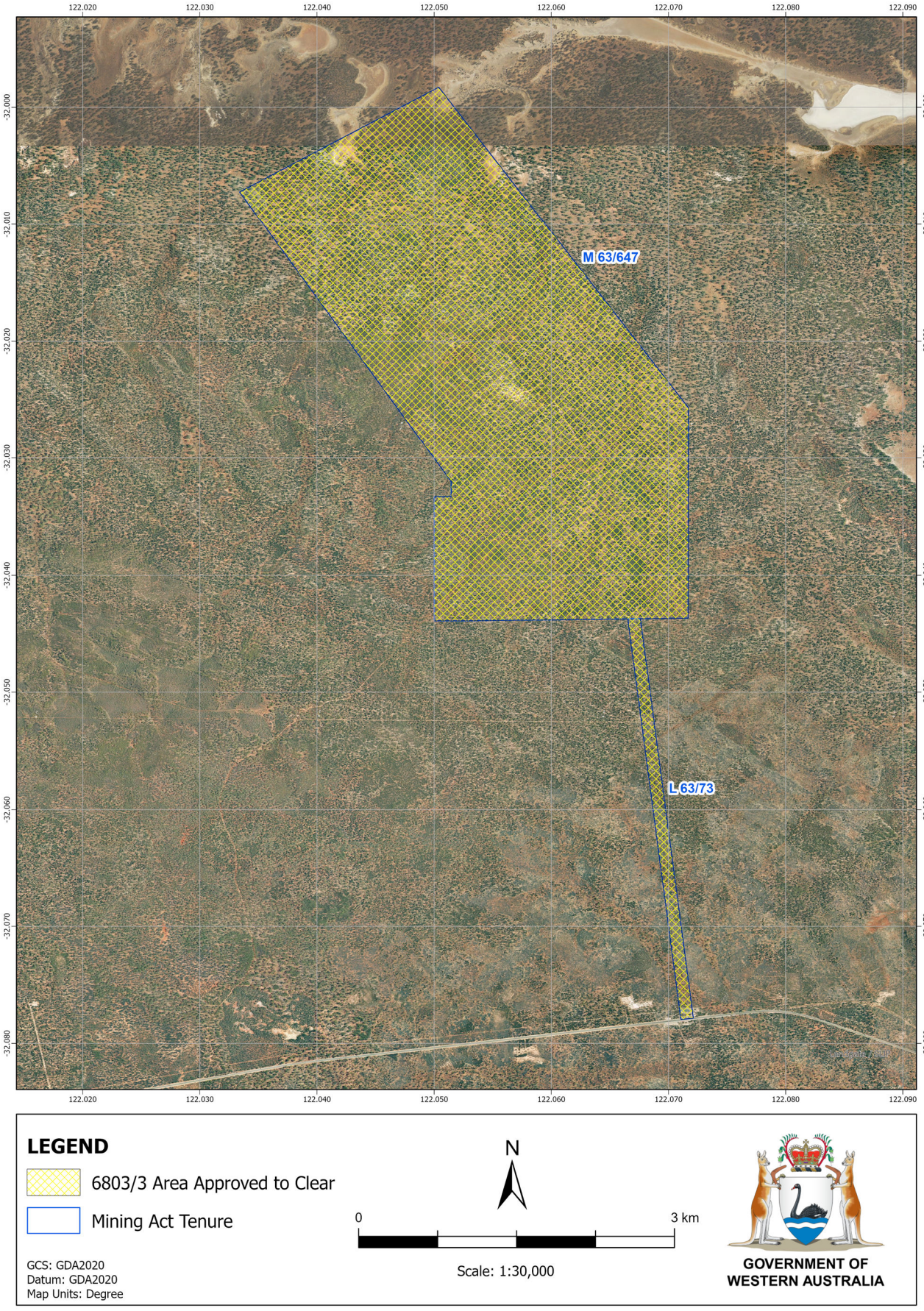

Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit.

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 (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)
- *Mining Act 1978* (WA)
- *Rights in Water and Irrigation Act 1914* (RIWI Act)

Relevant agreements (treaties) considered during the assessment include:

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

The key guidance documents which inform this assessment are:

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

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

No evidence of avoidance or mitigation measures was provided to support the application. No disturbance or clearing has been undertaken by the permit holder since the approval of CPS 6803/2 (Karora (Higginsville) Pty Ltd, 2025b).

3.2. Assessment of impacts on environmental values

A review of current environmental information (Appendix A) reveals that the assessment against the clearing principles has changed from the clearing permit decision report CPS 6803/2.

The area proposed to be cleared has not changed in size and no clearing activity has taken place in the area since CPS 6803/1 and CPS 6803/2 were granted. However, an assessment of current databases and previous surveys (NVS, 2015; Terrestrial Ecosystems, 2015; GIS Database) shows that the application area could provide habitat for conservation significant flora and fauna species, and while not identified in the previous surveys these species may have dispersed into the area in the intervening time period.

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

3.2.1. Biological values (flora) - Clearing principles (a) and (c)

Assessment

Flora

A detailed flora and vegetation survey was conducted within the application area and its surrounds on 26 to 27 August 2015 by Native Vegetation Solutions (NVS, 2015). The survey covered 1,037.35 hectares within a broader patch of native vegetation to the east of Lake Cowan. No threatened or priority flora were recorded within the application area. A limitation identified by NVS (2015) was the disturbance within the application area in the form of historic exploration drilling.

Threatened Flora

A record of *Eucalyptus platydisca* is located within 10 kilometres of the application area (GIS Database). This species is associated with granite hills, on poorly developed sandy to clay-loam soils, and is often found amongst large boulders in association with other *Eucalyptus* sp., *Acacia* sp., *Allocasuarina* sp., *Calothamnus* sp., *Grevillea* sp., *Melaleuca* sp., and *Triodia* sp. (Nicolle and Brooker, 2006). Both *Eucalyptus griffithsii* and *Allocasuarina helmsii* occur in the application area (NVS, 2015) and are associated with *Eucalyptus platydisca* (Nicolle and Brooker, 2006). Additionally, suitable soil types have been identified within the application area. This species has only been recorded in the area between the town of Norseman and the application area, and while not identified in the NVS (2015) survey, this species may be present in the area due to the age of the previous survey (GIS Database). Due to the threatened status of this species and its limited range, clearing within the application area

could have an impact on the conservation of this species if present. Impacts can be minimised by the implementation of a pre-clearance survey condition.

Priority Flora

The application area contains potentially suitable habitat for the following eight conservation significant flora species:

- *Acacia kerryana* (P2);
- *Allocasuarina eriochlamys* subsp. *grossa* (P3);
- *Bossiaea aurantiaca* (P1);
- *Chrysocephalum apiculatum* subsp. *norsemanense* (P3);
- *Frankenia glomerata* (P4);
- *Micromyrtus papillosa* (P1);
- *Myriophyllum petraeum* (P4);
- *Ptilotus rigidus* (P1); and
- *Thysanotus brachyantherus* (P2).

***Acacia kerryana* (P2)** is a low spreading, domed shrub growing to 0.3-1 metre in height (Maslin, 1982). It is an evergreen shrub with yellow flowers blooming from October to November or January to February. This species has been recorded in the Coolgardie IBRA Bioregion, found on plains and low rocky ridges distributed between Kambalda in the north and Norseman in the south within granitic loamy sands or clay sand soils, associated with low-lying shrub assemblages (WAH, 1998). As these soil types have been identified within the application area, and the species has been recorded within 10 kilometres of the application area, there is potential for this species to occur. Additionally, there are only 16 records of this species submitted to the Western Australian Herbarium with a limited number of plants identified at each record (WAH, 1998). As such if the species is present within the application area clearing could have an impact on the conservation of this species. Impacts can be minimised by the implementation of a pre-clearance survey condition.

***Allocasuarina eriochlamys* subsp. *grossa* (P3)** is a small shrub growing to 1-3 metres in height (Johnson, 1989). It is a she-oak with dark grey bark, red flowers, and dull green foliage. This species has been recorded in the Coolgardie and Nullarbor IBRA Bioregions within loose granitic soil, preferring stony loam, red clays or laterites (WAH, 1998). These soil types have been identified within the application area, and the species has been recorded within 10 kilometres of the application area. However, there are 28 records of this species submitted to the Western Australian Herbarium with 100-1000 plants identified at each record (WAH, 1998). As such if the species is present within the application area clearing is unlikely to have an impact on the conservation of this species.

***Bossiaea aurantiaca* (P1)** is a rounded or spreading spiny shrub growing to 1.5 metres in height and 2.2 metres in width, with yellow flowers blooming from September to October (Ross, 2006). This species has only been recorded in a limited range surrounding the town of Norseman in the Coolgardie IBRA Bioregion within red, sandy soil or red clayey loams, preferring low-lying terrain where run-off from higher ground increases soil moisture (Ross, 2006; WAH, 1998). As these soil types have been identified within the application area and the species has been recorded within 10 kilometres of the application area, there is potential for this species to occur. Additionally, there are only 13 records of this species submitted to the Western Australian Herbarium with 10-200 plants identified at each record (WAH, 1998). As such due to the poorly understood nature of the species and limited distribution, clearing of the application area could have an impact on the conservation of this species. Impacts can be minimised by the implementation of a pre-clearance survey condition.

***Chrysocephalum apiculatum* subsp. *norsemanense* (P3)** is an erect perennial herb growing to 30-60 centimetres in height, with multiple stems arising from the base with woolly leaves at the ends (Wilson, 2016). This species has been recorded in the Coolgardie and Murchison IBRA Bioregions, with most recordings within a 50 kilometre range of the town of Norseman and the Fraser Range, within a range of soil types inclusive of yellow to red sands, yellow sandy clay, and calcareous soils. (WAH, 1998). As these soil types have been identified within the application area and the species has been recorded within 5 kilometres of the application area, there is potential for this species to occur. Additionally, there are only 18 records of this species submitted to the Western Australian Herbarium with low or poorly recorded numbers identified per record (WAH, 1998). As such clearing within the application area if this species is present could impact the conservation of this species. Impacts can be minimised by the implementation of a pre-clearance survey condition.

***Frankenia glomerata* (P4)** is a prostrate shrub growing to 0.3 metres in height and 0.4 metres in width. It features grey-green leaves developing from multiple stems, with pale pink to purple flowers blooming in November (WAH, 1998). This species has been recorded in the Avon Wheatbelt, Carnarvon, Coolgardie, Gascoyne, Geraldton, Sandplains, Great Victoria Desert, Little Sandy Desert, and Mallee IBRA Bioregions within white sandy soils on the margins of salt lakes and watercourses (WAH, 1998). These soils have been identified within the application area, and the species has been recorded within 20km of the application area. However, the suitable habitat for this species within the application area is restricted to the minor salt lake that intersects a small area in the north of the application area. As such if the species is present within the application area clearing is unlikely to have an impact on the conservation of this species.

***Micromyrtus papillosa* (P1)** is an erect, low spreading shrub growing to 0.1-1.2 metres in height with white flowers blooming from April or August to October (Rye, 2002). This species has been recorded in the Coolgardie IBRA Bioregion, with most recordings from three hills within a range of less than 30 kilometres of each other, within sandy or clay soils on hills and rocky outcrops, often amongst ironstone or granite rocks (WAH, 1998). As these soil types have been identified within the application area and the species has been recorded within 10 kilometres of the application area, there is potential for this species to occur. However, this species is typically associated with hilly terrain which is absent from the application area (WAH, 1998). As such if the species is present within the application area clearing is unlikely to have an impact on the conservation of this species.

***Myriophyllum petraeum* (P4)** is an annual aquatic herb, growing to 0.15-0.3 metres in length, with white flowers blooming from August to December (WAH, 1998-). This species has been recorded in the Avon Wheatbelt, Coolgardie, Esperance Plains, and Mallee IBRA Bioregions within ephemeral rock pools on granite outcrops (WAH, 1998). While there are some granite outcrops identified within the application area, there are 58 records of this species submitted to the Western Australian Herbarium and

40-1000 plants identified at each record (WAH, 1998). As such if the species is present within the application area clearing is unlikely to have an impact on the conservation of this species.

***Ptilotus rigidus* (P1)** is a rigid subspinescens shrub growing to 0.25 metres in height, with dark green fleshy leaves and pink-purple flowers (Lally, 2009). It has been recorded in the Coolgardie and Murchison IBRA Bioregions within stony, shallow clay-loam soils adjacent to salt lakes, in particular concentrated on the edge of Lake Lefroy (WAH, 1998). These soil types have been identified within the application area, and the species has been recorded within 20 kilometres of the application area, however the suitable habitat for this species within the application area is restricted to the minor salt lake that intersects a small area in the north of the application area. As such if the species is present within the application area clearing is unlikely to have an impact on the conservation of this species.

***Thysanotus brachyantherus* (P2)** is a perennial herb, growing to 0.1-0.4 metres in height with purple flowers blooming from October to December (WAH, 1998). This species has been recorded in the Coolgardie, Esperance Plains, Mallee, and Murchison IBRA Bioregions within areas of sandy loam or clay loam soils over limestone. (WAH, 1998-). As these soil types have been identified within the application area and the species has been recorded within 20 kilometres of the application area, there is potential for this species to occur. While it has been recorded across a wide range, there have only been 18 records submitted to the Western Australian Herbarium with variable to poorly recorded numbers of plants identified per record. As such clearing within the application area if this species is present could impact the conservation of this species. Impacts can be minimised by the implementation of a pre-clearance survey condition.

Conclusion

Based on the above assessment, the proposed clearing may have significant impacts on the flora species and the following conditions will be implemented to mitigate the impacts of clearing.

Conditions

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- vegetation management condition to avoid the clearing of riparian vegetation and minimise the impacts of clearing on existing surface flows; and
- flora management condition to undertake a targeted flora survey prior to clearing areas that have not been surveyed within the past five years.

3.2.2. Biological values (fauna) - Clearing principles (a) and (b)

Fauna

A level 1 fauna survey was conducted on 26 August 2015 by Terrestrial Ecosystems within the application area and its surrounds (Terrestrial Ecosystems, 2015). The survey covered approximately 1,036 hectares within a broader patch of native vegetation to the east of Lake Cowan. No conservation significant fauna was identified within the application area, however suitable habitat for several conservation significant species was identified. An assessment of current information has identified records of twelve conservation significant species within 50 kilometres of the application area. An additional two species of conservation significance were identified beyond the 50 kilometre boundary, however suitable habitat for both species has been identified within the application area and due to the poorly understood distribution and conservation status of these species they have been included in this assessment. The following ten conservation significant fauna species are considered to potentially occur within the application area:

- *Charadrius cucullatus* (hooded plover) (Priority 4);
- *Falco hypoleucos* (grey falcon) (Vulnerable);
- *Falco peregrinus* (peregrine falcon) (Other Specially Protected);
- *Jalmenus aridus* (inland hairstreak butterfly);
- *Leipoa ocellata* (malleefowl) (Vulnerable);
- *Ogyris petrina* (arid bronze azure butterfly) (Critically Endangered);
- *Oxyura australis* (blue-billed duck) (Priority 4);
- *Phascogale calura* (red-tailed phascogale) (Conservation Dependent, Vulnerable);
- *Platycercus icterotis xanthogenys* (western rosella, inland) (Priority 4); and
- *Tringa nebularia* (common greenshank) (Migratory).

Birds

The blue-billed duck (*Oxyura australis*, P4), common greenshank (*Tringa nebularia*, MI), and hooded plover (*Charadrius cucullatus*, P4) are aquatic bird species that may potentially utilise the salt lake which intersects the northern section of the application area (DSE, 2003). The blue-billed duck prefers stable, deep, fresh well-vegetated wetlands, particularly swamps with dense vegetation (DSE, 2003), making it unlikely to rely on the non-perennial salt lake intersecting the application area. The common greenshank is a migratory bird that prefers inland wetlands and sheltered coastal habitats, including inland salt lakes in WA (Commonwealth of Australia, 2008). Similarly, the hooded plover is a coastal non-migratory bird that has been recorded moving from the coast to inland salt lakes in WA during winter (Commonwealth of Australia, 2008). While the intersecting salt lake could provide potential habitat for these species, the majority of the salt lake exists outside the application area, and the much larger Lake Cowan is found approximately 12 kilometres to the North-west of the application area. Therefore, the proposed clearing is not likely to impact the conservation significance of these species.

The grey falcon (*Falco hypoleucos*, VU) and peregrine falcon (*Falco peregrinus*, OS) are wide-ranging predatory birds, occurring throughout Australia (Commonwealth of Australia, 2008). The peregrine falcon is found in a wider range of habitats such as rainforests and alpine zones, whereas the grey falcon is more limited to the arid and semi-arid regions of Australia (Commonwealth of Australia, 2008). Both species may potentially utilise the area as a hunting ground as the habitat suits these activities. However, the habitat does not provide a suitable nesting habitat for either species, as such they would only be considered transient visitors, therefore the proposed clearing is not likely to impact the conservation significance of these species.

Malleefowl (*Leipoa ocellata*, VU) occurs in semi-arid to arid shrublands and low woodlands dominated by mallee and associated habitats, such as broombush *Melaleuca uncinata* and native pine *Callitris* spp. scrub (DCCEEW, 2024). Malleefowl can also occur in scrubs of acacia in central Australia however this is less frequent (DCCEEW, 2024). Nesting habitat occurs in light sandy soil and where leaf litter is abundant, for the construction and heating of the incubation mound (DCCEEW, 2024). This species forages on the ground in leaf litter or among low vegetation, such as herbs and shrubs (DCCEEW, 2024).

Terrestrial Ecosystems (2015) searched the application area for evidence of malleefowl. Several of the vegetation types recorded by NVS (2015) may provide leaf litter suitable for malleefowl and malleefowl mound construction, however there were no malleefowl mounds identified within the application area. The previous survey was conducted in 2015, and as no clearing has been conducted in the area during the intervening period it is possible that malleefowl may have since utilised the area as foraging/breeding habitat. Given potentially suitable foraging and breeding habitat may occur within the application area, impacts can be minimised with the implementation of a pre-clearance survey and directional clearing conditions.

The western rosella (*Platycercus icterotis*) is the smallest recorded rosella species, with the inland subspecies (*xanthogenys*) being recorded near the application area (GIS Database). This species may potentially utilise the area as foraging/nesting habitat, as the NVS (2015) survey identified two species of eucalypt that feature tree-hollows preferred by this species for nesting, *Eucalyptus salmonophloia* and *Eucalyptus loxophleba* subsp. *Lissophloia* (DEC, 2009; NVS, 2015). While the application area contains some suitable habitat for this species, it is unlikely it will be significantly impacted at a regional level, however it is recommended that trees containing hollows be inspected prior to clearing to avoid clearing any potential nesting habitat. Local impacts can be minimised with the implementation of a directional clearing condition to allow terrestrial fauna to move into adjacent habitat.

Mammals

Red-tailed phascogale populations are restricted to remnants of mature Wandoo (*Eucalyptus wandoo)* or Rock Oak (*Allocasuarina huegeliana*) woodland in the WA wheatbelt where annual rainfall is between 300-600mm, and prefers dense canopy with tree hollows, which it utilises for nesting (Commonwealth of Australia, 2008). Native Vegetation Solutions (2015) identified two species of Eucalypt that feature tree hollows preferred by this species for nesting, *Eucalyptus salmonophloia* and *Eucalyptus loxophleba* subsp. *Lissophloia* (Mekhorst and Knight, 2011; NVS, 2015). However, the application area is outside of the preferred rainfall range for this species and is outside of the known range for this species. As such, the red-tailed phascogale is unlikely to utilise the application area and the proposed clearing is unlikely to impact the conservation significance of this species. Despite this, it is recommended that trees containing hollows be inspected prior to clearing to avoid clearing any potential nesting habitat. Local impacts can be minimised with the implementation of a directional clearing condition to allow terrestrial fauna to move into adjacent habitat.

Invertebrates

Arid bronze azure butterfly (ABAB) (*Ogyris petrina*) populations are severely fragmented, restricted in geographic range and sensitive to clearing and habitat disturbance (DBCA, 2020). The preferred habitat is described as vegetation of mature mixed gimlet (*Eucalyptus* salubris) and salmon gum (*Eucalyptus salmonophloia*) woodlands on red-brown loam soils, with an open understorey (DBCA, 2020). Both eucalyptus species occur within the application area (NVS, 2015), with matching soil types being found in the Dundas and Sedgeman land systems that intersect the application area (GIS Database). ABAB has an obligate association with a sugar ant *Camponotus* sp. Nr. *terebrans* (DBCA, 2020). Terrestrial Ecosystems (2015) did not previously consider the ABAB, however, species information and guidelines have been updated since the last survey was conducted over the application area. Potential impacts to the ABAB can be minimised with the implementation of a pre-clearance fauna survey condition.

Inland hairstreak butterfly (*Jalmenus aridus*) is data deficient and previously only known to two locations near Kalgoorlie, however, has been recorded from another 10 locations within an area of extending approximately 121 kilometres north to south by 42 kilometres east to west (Eastwood *et al*., 2023). The preferred habitat for this species is summarised as open woodland, *Senna artemisioides* subsp. *filifolia*, variety of flowering shrubs (*Eremophila*, *Scaevola*, and *Maireana*) and open areas of well drained exposed ground adjoining the hostplants (Eastwood *et al*., 2023). Inland hairstreak caterpillars feed on flowers of Senna *artemisioides* subsp. *filifolia* and this species forms an obligate association with ant species, *Froggattella kirbii* (Eastwood *et al*., 2023). Terrestrial Ecosystems (2015) did not previously consider the inland hairstreak butterfly, however, the information relating to this species has been updated since the last fauna survey was conducted over the application area (Eastwood *et al*., 2023). Native Vegetation Solutions (2015) identified *Artemisiodes* subsp. *filifolia* within the application area in addition to multiple *Eremophila* and *Maireana* subspecies, providing suitable habitat for the inland hairstreak butterfly. Potential impacts to inland hairstreak butterfly can be minimised with the implementation of a pre-clearance fauna survey condition.

Conclusion

Based on the above assessment, the proposed clearing may have significant impacts on the aforementioned fauna species and the following conditions will be implemented to mitigate the impacts of clearing.

Conditions

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

- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;

- a fauna management (malleefowl) condition requiring areas proposed to be cleared between 1 September and 31 January are inspected to identify active (in use) malleefowl mounds, and to maintain a 200 metre buffer around identified active mounds;
- a fauna management (ABAB) condition requiring areas proposed to be cleared to be surveyed to identify potential critical habitat, ant colonies and ABAB individuals and no clearing within 100 metres of ant colonies; and
  a fauna management (inland hairstreak butterfly) condition requiring areas proposed to be cleared to be surveyed to identify potential critical habitat and inland hairstreak butterfly, and no clearing within 50 metres of associated host plants.

3.3. Relevant planning instruments and other matters

The clearing permit amendment application was advertised on 22 July 2025 by the Department of Mines, Petroleum and Exploration inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WCD2014/004) over the area under application (DPLH, 2025). This claim has been determined by the Federal Court on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no registered Aboriginal Sites of Significance within the application area (DPLH, 2025). 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.

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

Other relevant authorisations required for the proposed land use include:

- A Mining Development and Closure Proposal approved under the *Mining Act 1978;* and
- A Programme of Work approved under the *Mining Act 1978*.

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

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is located approximately 30 kilometres North-east of Norseman on unallocated crown land within the Shire of Dundas in the extensive land use zone of Western Australia (GIS Database). The area proposed to be cleared is situated in an expansive tract of native vegetation West of Lake Cowan, and immediately South of a minor non-perennial lake (GIS Database). The predominant land use in the region is Unallocated Crown Land (UCL), Crown reserves, grazing-native pasture leasehold, freehold, conservation and mining leases (CALM, 2002).
Ecological linkage	Based on aerial imagery, the application area does not form part of any formal or informal ecological linkages (GIS Database).
Conservation areas	The application area does not form part of any known or mapped conservation areas. The closest record is the Dundas Nature Reserve located approximately 12 kilometres east South-east of the area proposed to be cleared (GIS Database).
Vegetation description	The vegetation of the application area is broadly mapped as the following Beard vegetation associations: • 8: Medium woodland; salmon gum & gimlet; • 10: Medium woodland; red mallee group; and • 524: Medium woodland; Dundas blackbutt & red mallee (GIS Database). A level 1 flora and vegetation survey was conducted over the application area by Native Vegetation Solutions (NVS) on 26 and 27 August 2015. The following vegetation types were recorded within the application area (NVS, 2015): **Acacia acuminata thicket over Granite outcropping** Dominant species were *Acacia acuminata, Austrostipa nitida, Eremophila georgei, Eremophila decipiens* subsp*. decipiens, Senna artemisioides* subsp*. filifolia, Santalum acuminatum* and *Solanum lasiophyllum*. **Mixed Eucalyptus woodland over mixed sclerophyll shrubland** Dominant species were *Eucalyptus species, Atriplex vesicaria, Atriplex stipitata, Alectryon oleifolius, Santalum acuminatum* and *Eremophila interstans* subsp*. virgata.* **Tecticornia shrubland** Dominant species were *Tecticornia indica* subsp*. bidens, Frankenia pauciflora, Carpobrotus modestus, Cratystylis conocephala* and *Gunniopsis quadrifida*. **Eucalyptus salubris woodland over Chenopod shrubland** Dominant species were *Eucalyptus salubris, Tecticornia disarticulata, Atriplex vesicaria, Ptilotus obovatus* and *Sclerolaena diacantha.* **Mixed Eucalyptus woodland over Melaleuca sheathiana and Eremophila interstans** Dominant species were *Eucalyptus lesouefii, Melaleuca sheathiana, Eremophila interstans* subsp*. virgata, Olearia muelleri* and *Westringia rigida.* **Burnt Eucalyptus woodland thicket** Dominant species were *Eucalyptus prolixa, Eucalyptus urna, Eucalyptus dundasii, Atriplex vesicaria, Olearia muelleri, Daviesia benthamii* subsp*. acanthoclona* and *Eremophila scoparia.* **Eucalyptus mallee woodland** Dominant species were *Eucalyptus griffithsii, Eucalyptus calycogona* subsp*. calycogona, Eucalyptus cylindriflora, Exocarpos aphyllus, Alyxia buxifolia, Dodonaea stenozyga, Trymalium myrtillus* subsp*. myrtillus* and *Westringia rigida.* **Eucalyptus ravida woodland** *Dominant species were Eucalyptus ravida, Melaleuca sheathiana, Dodonaea stenozyga, Olearia muelleri, Eremophila ionantha, Exocarpos aphyllus* and *Eremophila interstans* subsp*. virgata.*
Vegetation condition	The vegetation survey (NVS, 2015) and aerial imagery (GIS Database) indicate the vegetation within the proposed clearing area is in 'good' to 'very good' (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix C.
Climate and landform	The climate for the Eastern Goldfields subregion is arid to semi-arid, with an annual rainfall of 254.4 millimetres recorded at Norseman (BoM, 2025). The application area is mapped within elevation areas of 280 to 320 meters Australian height datum (GIS Database).

Characteristic	Details
Soil description and land degradation risk	The soil is mapped as a part of the following land systems and soil descriptions (DPIRD, 2025a; Waddell and Galloway, 2023; GIS Database): • **Dundas Land System (268Du)** gently undulating calcareous plains, with occasional stony rises, supporting eucalypt and melaleuca woodlands over false bluebush shrublands. Soils associated with this land system are calcareous gravelly shallow loam, calcareous gravelly loamy earth, red-brown non-cracking clay, and red loamy earth. This land system is generally not susceptible to eroision; • **Lefroy Land System (268Lf)** salt lakes and fringing saline plains, sand sheets and dunes, supporting halophytic shrublands and scattered eucalypts. Soils associated with this land system are red deep sand, calcareous sandy earth, red sandy earth, alkaline red shallow sandy duplex, and alkaline red deep sandy duplex. This land system is naturally highly susceptible to erosion, however low slope causes eroded materials to be deposited locally, resulting in a state of dynamic equilibrium; and • **Sedgeman Land System (268Sd)** low granite domes and outcrop with gritty-surfaced plains, supporting eucalypt stands and acacia-dominated shrublands. Soils associated with this land system are bare granite rock, red shallow loam, red loamy earth, red shallow sand, and red shallow loam. This land system is generally not susceptible to erosion.
Waterbodies	The desktop assessment and aerial imagery indicated that a minor non-perennial surface water body transects the area proposed to be cleared, with two minor non-perennial watercourses approximately one kilometre north and two kilometres east of the area proposed to be cleared (GIS Database).
Hydrogeography	The area proposed to be cleared is located within the Goldfields Groundwater Area proclaimed under the *Rights in Water and Irrigation Act 1914* (GIS Database). The application area occurs within the Balladonia catchment (GIS Database). The mapped groundwater salinity is of 14,000-35,000 milligrams per total dissolved solids which is described as saline to hypersaline (GIS Database).
Flora	There are records of 10 priority flora within 20 kilometres of the area proposed to be cleared (GIS Database).
Ecological communities	There are no Priority Ecological Communities or Threatened Ecological Communities (PECs/TECs) recorded within the local surrounds (20 kilometres).
Fauna	There are records of 12 fauna of conservation significance within 50 kilometres of the area proposed to be cleared, with one record of Malleefowl (*Leipoa ocellata*) within five kilometres of the area proposed to be cleared (GIS Database).
Fauna habitat	Six broad fauna habitats were identified within the application area, in addition to habitat disturbed by exploration drilling (TE, 2015): • eucalypt woodland over chenopod and other shrubs; • eucalypt woodland with little understorey; • acacia thicket; • samphire flats; • eucalypt regrowth; and • disturbed areas.

A.2. Vegetation extent

	Pre-European area (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current extent in all DBCA Managed Land (proportion of pre-European extent) (%)
IBRA Bioregion - Coolgardie	12,912,204.35	12,648,491.39	97.96	2,114,349.37	16.37
Beard vegetation associations - State					
Veg Assoc No. 8	694,638.14	346,425.77	49.87	47,035.60	6.77
Veg Assoc No. 10	145,676.38	144,162.80	98.96	4,438.04	3.05
Veg Assoc No. 524	347,565.69	347,547.71	99.99	151,132.13	43.48
Beard vegetation associations - Bioregion					
Veg Assoc No. 8	280,248.26	275,589.11	98.34	26,689.01	9.52
Veg Assoc No. 10	32,790.19	32,790.19	100.00	0.00	0.00

Veg Assoc No. 524	325,305.07	325,287.09	99.99	128,871.52	39.62

Government of Western Australia (2019)

A.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (Appendix D.1), and the flora survey conducted by NVS (2015), impacts to the following conservation significant flora required further consideration.

Species name	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)
Threatened			
Eucalyptus platydisca	Y	<10	42
Priority 1			
Bossiaea aurantiaca	Y	<10	13
Micromyrtus papillosa	Y	<10	16
Ptilotus rigidus	Y	<20	21
Priority 2			
Acacia kerryana	Y	<10	16
Thysanotus brachyantherus	Y	<20	18
Priority 3			
Allocasuarina eriochlamys subsp. *grossa*	Y	<10	28
Chrysocephalum apiculatum subsp. *norsemanense*	Y	<5	18
Priority 4			
Frankenia glomerata	Y	<20	69
Myriophyllum petraeum	Y	<10	58

A.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (Appendix D.1), and the fauna survey conducted by Terrestrial Ecosystems (2015), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)
Birds			
Oxyura australis (blue-billed duck)	P4	Y	<50
Zanda latirostris (Carnaby's cockatoo)	EN	N	<35
Tringa nebularia (common greenshank)	MI	Y	<50
Falco hypoleucos (grey falcon)	VU	Y	<45
Charadrius cucullatus (hooded plover)	P4	Y	<40
Leipoa ocellata (malleefowl)	VU	Y	<5
Pezoporus occidentalis (night parrot)	CR	N	<45
Falco peregrinus (peregrine falcon)	OS	Y	<25
Calidris ruficollis (red-necked stint)	MI	N	<40
Platycercus icterotis xanthogenys (western rosella, inland)	P4	Y	<40
Invertebrates			
Ogyris petrina (arid bronze azure butterfly)	CR	Y	<150
*Jalmenus aridus (*inland hairstreak butterfly)	P1	Y	<150
Mammals			
Nyctophilus major tor (central long-eared bat)	P3	N	<35

Phascogale calura (red-tailed phascogale)	CD	Y	<45

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, MI: migratory, CD: conservation dependent, OS: other specially protected, P: priority

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared contains potential habitat for conservation significant flora and fauna species.	May be at variance (changed from CPS 6803/2)	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The area proposed to be cleared contains potential habitat for conservation significant fauna.	May be at variance (changed from CPS 6803/2)	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The area proposed to be cleared may contain suitable habitat for Threatened flora.	May be at variance (changed from CPS 6803/2)	Yes *Refer to Section 3.2.1, above.*
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database). No vegetation analogous to TECs was recorded in the flora survey provided (NVS, 2015).	Not likely to be at variance (as per CPS 6803/2)	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia, 2001). The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.	Not likely to be at variance (as per CPS 6803/2)	No
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area is 40 kilometres (GIS Database), the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance (as per CPS 6803/2)	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment:	At variance (as per CPS 6803/2)	No

Assessment against the clearing principles	Variance level	Is further consideration required?
There are no permanent water courses or wetlands recorded within the application area. There is one ephemeral salt lake that transects the application area. This salt lake is associated with the vegetation type '*Tecticornia* shrubland' (NVS, 2015). Potential impacts to vegetation associated with this salt lake can be minimised by the continued implementation of a vegetation management condition.		
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are moderately susceptible to soil erosion when vegetation is cleared (DPIRD, 2025a). Noting the extent of the application area, the proposed clearing is likely to have an appreciable impact on land degradation. Potential impacts to biodiversity as a result of land degradation can be minimised by the continued implementation of a staged clearing condition.	May be at variance (as per CPS 6803/2)	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: The application area is not located within a Public Drinking Water Source Area (GIS Database). The application area is located within the proclaimed Goldfields groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for purposes other than domestic and/or stock watering is subject to licence by the Department of Water and Environmental Regulation. Due to the climate and salinity of the area (BoM, 2025; GIS Database), the proposed clearing is not likely to cause deterioration in the quality of surface or ground water.	Not likely to be at variance (as per CPS 6803/2)	No
Principle (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."* Assessment: There are no permanent watercourses or wetlands recorded within the application area, with one minor ephemeral salt lake intersecting the application area (GIS Database). There is likely to be little surface flow during normal seasonal rains due to the climate of the application area (BoM, 2025; GIS Database). Larger rainfall events may result in flooding of the area, however the proposed clearing is not likely to contribute to waterlogging or increased incidence or intensity of flooding.	Not likely to be at variance (as per CPS 6803/2)	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.

Condition	Description
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 datasets

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

- Cadastre (Polygon) (LGATE-217)
- Clearing Instruments Activities (Areas Approved to Clear) (DWER-076)
- Clearing Instruments Conditions (Areas Subject to Conditions) (DWER-077)
- Clearing Instruments Proposals (Areas Applied to Clear) (DWER-075)
- Clearing Referral Proposal (DWER-116)
- Clearing Regulations - Environmentally Sensitive Areas (DWER-046)
- Clearing Regulations - Schedule One Areas (DWER-057)
- DBCA - Lands of Interest (DBCA-012)
- DBCA - Legislated Lands and Waters (DBCA-011)
- DBCA Fire History (DBCA-060)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments - Catchments (DWER-028)
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- IBSA Survey Details (DWER-118)
- Local Government Area (LGA) Boundaries (LGATE-233)
- Localities (LGATE-234)
- Native Title (Determination) (LGATE-066)
- Native Title (Fed Court) (LGATE-005)
- Native Vegetation Extent (DPIRD-005)
- Pre-European Vegetation (DPIRD-006)
- Public Drinking Water Source Areas (DWER-033)
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping - Best Available (DPIRD-027)
- Townsites (LGATE-248)

Restricted GIS Databases used:

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

D.2. References

Bureau of Meteorology (BoM) (2025) Bureau of Meteorology Website – Climate Data Online, Norseman Aero, Station Number 12009. Bureau of Meteorology. https://reg.bom.gov.au/climate/data/ (Accessed 3 December 2025).

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

Commonwealth of Australia (2008) Species Profile and Threats Database. Department of Climate Change, Energy, the Environment and Water, Australia. https://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl (Accessed 4 December 2025).

Conservation and Land Management (CALM) (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.

Department of Biodiversity, Conservation and Attractions (DBCA) (2020) Guideline for the survey of arid bronze azure butterfly (ABAB) in Western Australia. Available from: Threatened and priority fauna resources | Department of Biodiversity, Conservation and Attractions (Accessed 10 December 2025).

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2024) National recovery plan for the Malleefowl (Leipoa ocellata). Available from: https://www.dcceew.gov.au/environment/biodiversity/threatened/recovery-plans/malleefowl-leipoa-ocellata-2007 (Accessed 10 December 2025).

Department of Environment and Conservation (DEC) (2009) Fauna Notes No.24: Western Rosella (*Platycercus icterotis xanthogenys*). Department of Environment and Conservation, Western Australia. Western Rosella 2009.pdf (Accessed 3 December 2025).

Department of Environment Regulation (DER) (2014) *A guide to the assessment of applications to clear native vegetation*. Perth. https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf

Department of Planning, Lands and Heritage (DPLH) (2025) Aboriginal Cultural Heritage Inquiry System. Department of Planning, Lands and Heritage. https://espatial.dplh.wa.gov.au/ACHIS/index.html?viewer=ACHIS (Accessed 8 December 2025).

Department of Primary Industries and Regional Development (DPIRD) (2025a) NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia. https://dpird.maps.arcgis.com/apps/webappviewer/index.html?id=662e8cbf2def492381fc915aaf3c6a0f (Accessed 3 December 2025).

Department of Primary Industries and Regional Development (DPIRD) (2025b) Western Australian Organism List. Department of Primary Industries and Regional Development. Government of Western Australia. https://www.dpird.wa.gov.au/online-tools/western-australian-organism-list/ (Accessed 4 December 2025).

Department of Sustainability and Environment (DSE) (2003) Action Statement No.174: Blue-billed Duck (Oxyura australis). Department of Sustainability and Environment, Victoria. Blue-billed Duck 2003.pdf (Accessed 3 December 2025)

Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. https://www.wa.gov.au/system/files/2024-11/procedure-native-vegetation-clearing-permits.pdf

Eastwood, R. Jacks, A. Williams, A.A.E. Petersen. L, Cameron, J. (2023) Current distribution, preferred habitat, behaviour, and biology of the Inland Hairstreak, *Jalmenus aridus* Graham & Moulds, 1988 (Lepidoptera: Lycaenidae) in the Eastern Goldfields region of Western Australia. Records of the Western Australian Museum.

Environmental Protection Authority (EPA) (2014) WA Environmental Offsets Guidelines. https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/WA%20Environmental%20Offsets%20Guideline%20August%202014.pdf

Environmental Protection Authority (EPA) (2016a) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment.http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf

Environmental Protection Authority (EPA) (2016b) Technical Guidance – Terrestrial Fauna Surveys. https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf

Environmental Protection Authority (EPA) (2020) Technical Guidance – Terrestrial Fauna Surveys. https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf

Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Johnson L.A.S. (1989) Flora of Australia, Hamamelidales to Casuarinales, Australian Government Publishing Service, Canberra (1989), 3, 139. Flora of Australia Volume 3—Hamamelidales to Casuarinales - DCCEEW (Accessed 4 December 2025)

Karora (Higginsville) Pty Ltd (2025a) Application to amend a clearing permit, Form C4. Karora (Higginsville), Western Australia. Received 15 May 2025.

Karora (Higginsville) Pty Ltd (2025b) 6803/2 Musket Project Annual Clearing Report. Karora (Higginsville) Pty Ltd, Western Australia. Received 24 July 2025.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Lally, T.R. (2009) New taxa of *Ptilotus* (Amaranthaceae) from Western Australia. Nyutsia: Western Australian Herbarium, 19, 57-59. https://doi.org/10.58828/nuy00552 (Accessed 4 December 2025).

Maslin, B.R. (1982) Studies in the genus *Acacia* (Leguminosae: Mimosoideae)-12. Two new species from the eastern goldfields, Western Australia. Nuytsia: Western Australia Herbarium, 4, 105-107. https://doi.org/10.58828/nuy00071 (Accessed 4 December 2025).

Menkhorst, P., and Knight, F. (2011) A Field Guide to the Mammals of Australia, Third Edition. Oxford University Press, Victoria, Australia.

Native Vegetation Solutions (NVS)(2015) Level 1 Flora and Vegetation Survey of the Proposed Musket Project Tenement M63/647 and L63/73. Prepared for Metals X Limited, Avoca Resources Pty Ltd, Higginsville Gold Operation. September, 2015.

Nicolle, D. and Brooker, M.I.H. (2006) Formal recognition of *Eucalyptus platydisca* (Myrtaceae), an arid-zone monocalypt from south-western Australia. Nyutsia: Western Australian Herbarium, 16 (1), 87-94. https://doi.org/10.58828/nuy00456 (Accessed 4 December 2025).

Ross, J. H. (2006) A Conspectus of the Western Australian *Bossiaea* Species (Bossiaeea: Fabaceae). Muellaria: National Herbarium of Victoria, 23, 102-104. Journal | Royal Botanic Gardens Victoria (Accessed 4 December 2025).

Rye, B.L. (2002) A revision of th south-western Australian species of Micromyrtus (Myrtaceae) with five antisepalous ribs on the hypanthium. Nyutsia: Western Australian Herbarium, 15, 116-117. https://doi.org/10.58828/nuy00395 (Accessed 4 December 2025).

Terrestrial Ecosystems (2015) Level 1 Vertebrate Fauna Risk Assessment for the Musket Project. Prepared for Native Vegetation Solutions, October 2015.

Waddell, P.A. and Galloway, P.D. (2023) Land systems, soils and vegetation of the southern Goldfields and Great Western Woodlands of Western Australia. Technical bulletin 99, volume 2. Department of Primary Industries and Regional Development, Western Australian Government.

Western Australian Herbarium (WAH) (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. https://florabase.dbca.wa.gov.au/ (Accessed 4 December 2025).

Wilson, Paul G. (2016) A Taxonomic Treatment of *Chrysocephalum apiculatum* and *C. semipapposum* (Asteraceae: Gnaphalieae. Nuytsia: Western Australian Herbarium, 27, 63. https://doi.org/10.58828/nuy00750 (Accessed 4 December 2025).

Glossary

Acronyms:

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

Definitions:

DBCA (2023) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia:

Threatened species

T 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 the species of fauna that are listed as critically endangered, endangered or vulnerable threatened species.

Threatened flora is the species of flora that are listed as critically endangered, endangered or vulnerable threatened species.

The assessment of the conservation status of threatened species is in accordance with the BC Act listing criteria and the requirements of Ministerial Guideline Number 1 and Ministerial Guideline Number 2 that adopts the use of the International Union for Conservation of Nature (IUCN) Red List of Threatened Species Categories and Criteria, and is based on the national distribution of the species.

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.

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.

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.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

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).

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.

Specially protected species

SP **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).

Migratory species include birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) or 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.

CD **Species of special conservation interest (conservation dependent fauna)**

Species of special conservation need that are 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).

Currently only fauna are listed as species of special conservation interest.

OS **Other specially protected species**

Species 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).

Currently only fauna are listed as species otherwise in need of special protection.

Priority species

P **Priority species**

Priority is not a listing category under the BC Act. The Priority Flora and Fauna lists are maintained by the department and are published on the department's website.

All fauna and flora are protected in WA following the provisions in Part 10 of the BC Act. The protection applies even when a species is not listed as threatened or specially protected, and regardless of land tenure (State managed land (Crown land), private land, or Commonwealth land).

Species that may possibly be threatened species that do not meet the criteria for listing under the BC Act because of insufficient survey 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 prioritisation for survey and evaluation of conservation status so that consideration can be given to potential listing as threatened.

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

Assessment of priority status 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 – known from few locations, none on conservation lands**

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, for example, 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 for threatened listing and appear to be under immediate threat from known threatening processes. These species are in urgent need of further survey.

P2 **Priority Two - Poorly-known species – known from few locations, some on conservation lands**

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, for example, 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 for threatened listing and appear to be under threat from known threatening processes. These species are in urgent need of further survey.

P3 **Priority Three - Poorly-known species – known from several locations**

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. These species need 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 a conservation dependent specially protected species.

(c) Species that have been removed from the list of threatened species or lists of conservation dependent or other specially protected species, during the past five years for reasons other than taxonomy.

(d) Other species in need of monitoring.

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.