



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	9434/1
Permit type:	Purpose Permit
Applicant name:	Evolution Mining (Mungari) Pty Ltd
Application received:	16 September 2021
Application area:	300 hectares
Purpose of clearing:	Mineral Production
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 16/548
Location (LGA area/s):	Shire of Coolgardie
Colloquial name:	Paradigm Project

1.2. Description of clearing activities

Evolution Mining (Mungari) Pty Ltd proposes to clear up to 300 hectares of native vegetation within a boundary of approximately 1,901 hectares, for the purpose of mineral production. The project is located approximately 52 kilometres north of Coolgardie, within the Shire of Coolgardie.

The application is to allow for the development of the Paradigm project and includes pits, waste dumps and mining infrastructure.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	9 June 2022
Decision area:	300 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 16 September 2021. DMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix D), supporting information provided by the applicant including the results of a flora and vegetation survey, the clearing principles set out in Schedule 5 of the EP Act, proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3). The Delegated Officer also took into consideration that this application covered the same area as clearing permit 8165/1 and the applicant needed to apply for a new permit as purpose permits cannot be transferred between permit holders.

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 vegetation which provides habitat for conservation significant flora.

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.

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 includes:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM 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 2021)
- 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

No specific evidence of avoidance or mitigation measures were provided to support the application. However, the applicant has committed to undertaking disturbance in a manner to avoid key environmental values and reducing impacts to as low as reasonably practicable.

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 and flora). 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 Principle (a)

Assessment

The application area is within the Great Western Woodlands, which represents the largest and most intact eucalypt woodland remaining in southern Australia and is one of the best examples of its type in the world (Botanica, 2018; DEC, 2010). The application area lies towards the northern extent of the woodlands (approximately 40 kilometres from the northern boundary) (Botanica, 2018; DEC, 2010). The Great Western Woodlands covers a total area of approximately 16 million hectares, and is recognised for its flora and fauna species richness and high number of endemic flora species (DEC, 2010). However, the application area contains existing mining disturbance and the clearing of 300 hectares is not likely to have a significant impact on the values of the Great Western Woodlands.

A reconnaissance flora and vegetation was conducted by Botanica over the application area during October 2015 and May 2018 (Botanica, 2018). A total of 94 species, from 23 families and 43 genera were recorded within twelve vegetation associations from the application area (Botanica, 2018).

No Threatened or Priority flora species were recorded during the flora survey (Botanica, 2018). A desktop assessment of nearby flora records identified six species of Priority flora which were considered to possibly occur within the application area; *Atriplex lindleyi* subsp. *conduplicata* (Priority 3), *Austrostipa burgensiana* (Priority 1), *Eremophila praecox* (Priority 2), *Gompholobium cinereum* (Priority 3), *Notisia intonsa* (Priority 3) and *Ricinocarpus digynus* (Priority 1). *Atriplex lindleyi* subsp. *conduplicata*, *Eremophila praecox*, *Gompholobium cinereum* and *Notisia intonsa* are all known from multiple records across a wide distribution (Western Australian Herbarium, 1998-). Whilst they have the potential to be present within the application area, the proposed clearing is not likely to have a significant impact on habitat for these species.

Austrostipa burgensiana is only known from one record near Mt Burgess Station homestead, approximately 20 kilometres from the application area (Nuytsia, 2022). It has been recorded as an infrequent component of a *Maireana pyramidata* shrubland on a flowline within a calcareous plain (Nuytsia, 2022). The CLP-CFW2 vegetation type includes areas of *Maireana pyramidata* shrubland on clay-loam plains (Botanica, 2018). There was 66 hectares of this vegetation type mapped in the northwest of the application area (Botanica, 2018). Whilst the proposed clearing may remove some potential habitat for this species, the proposed clearing is not likely to significantly reduce the amount of habitat in the local area (surrounding 20 kilometres).

Ricinocarpus digynus is known from nine records and is typically found on rocky hillslopes with *Casuarina pauper* forest (Western Australian Herbarium, 1998-). There are areas of rocky hillslope within the application area however, these communities did not include any *Casuarina pauper* forest (Botanica, 2018). Based on the current known habitat for this species, the vegetation within the application area is not likely to represent significant habitat for this species.

The vegetation condition within the survey area was described as good to very good on the Keighery scale with a portion of the application area described as completely degraded by previous mining activities (Botanica, 2018). Four weed species were recorded during the flora survey. These species were *Carthamus lanatus* (Saffron Thistle), *Dittrichia graveolens* (Stinkwort), *Salvia verbenaca* (Wild Sage) and *Cucumis myriocarpus* (Prickly Paddy Melon). Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas, particularly given the proximity of the application area to the former Credo Pastoral Lease which is proposed for conservation.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on habitat for Priority flora is not likely to be significant. There are weeds present within the application area and the proposed clearing has the potential to exacerbate the spread of weeds.

Conditions

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

- take hygiene steps to minimise the risk of the introduction and spread of weeds.

3.2.2. Biological values (fauna) - Clearing Principle (b)

Assessment

The following six fauna habitats have been identified within the application area (Botanica, 2018):

- Clay-Loam Plains: *Casuarina* Forests and Woodlands (approximately 131 hectares, ~7%);
- Clay-Loam Plains: Eucalypt Woodlands (approximately 1,311 hectares, ~69%);
- Clay-Loam Plains: Eucalypt Woodlands / Mallee Woodlands and Shrublands (approximately 102 hectares, ~5%);
- Closed Depression: Chenopod Shrublands, Samphire Shrublands and Forblands (approximately 3 hectares, ~0.2%);
- Hillslope: Eucalypt Woodlands (approximately 147 hectares, ~8%); and
- Open Depression: Eucalypt Woodlands (approximately 20 hectares, ~1%).

In addition to the above fauna habitats, approximately 189 hectares (~10%) is considered to be entirely devoid of suitable native fauna habitat due to historical mining disturbances (Botanica, 2018).

A desktop study found four amphibian species, 73 reptilian species, 109 avian species, twelve non-volant mammalian species and eleven volant mammalian species (bats) as potentially occurring within the application area (Botanica, 2018). Of the 209 native fauna potentially occurring within the application area, the following species of conservation significant fauna were identified as possibly occurring within the application area (Botanica, 2018);

- Malleefowl (*Leipoa ocellata*; Vulnerable)
- Peregrine Falcon (*Falco peregrinus*; Other specially protected fauna)
- Central Long-eared Bat (*Nyctophilus major tor*; Priority 3)

The Malleefowl previously inhabited much of the Goldfields region, however their range and abundance is now greatly reduced. There are several records of Malleefowl within 25 kilometres of the clearing permit and there is suitable habitat for this species present (GIS Database). The assessment of clearing permit 8165/1 (which covers the same area as this application) concluded that there is potential for the application area to contain breeding habitat for Malleefowl. A condition was placed on the permit requiring pre-clearing surveys to identify any Malleefowl mounds and any critical habitat for this species. A targeted search was undertaken in 2020 which did not record any Malleefowl mounds (Botanica, 2020). The habitat within the area was not considered to be critical habitat due to the sparse vegetation and lack of sufficient cover to support breeding in the area (Botanica, 2020).

The Peregrine Falcon may utilise the application area as part of a much larger home range for foraging; and the Central Long-eared Bat has previously been recorded during bat surveys at the Kanowna Bell mine site that is approximately 60 kilometres southeast from the Paradigm Gold Project (Barrick, 2011 as referenced by Botanica, 2018). The Central Long-eared Bat may utilise tree hollows within the application area for breeding (Botanica, 2018). The landforms and habitat types found within the application area are relatively common and widespread in the region (Botanica, 2018; CALM, 2002; GIS Database). Whilst the proposed clearing may reduce the amount of vegetation locally, it is unlikely to represent significant habitat for fauna in a regional context.

Conclusion

Based on the above assessment, the proposed clearing will not result in the clearing of vegetation which is a significant fauna habitat.

Conditions

No fauna management conditions required.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 1 October 2021 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There are two native title claims over the area under application (DPLH, 2022). These claims have been registered with the National Native Title Tribunal on behalf of the claimant groups. 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, 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	The application area is located approximately 52 kilometres north of Coolgardie. The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. There is an existing mine within the application area including pits and waste rock dumps (GIS Database).
Ecological linkage	According to available databases, the application area does not contain any known or mapped ecological linkages.
Conservation areas	The closest conservation area is the former Creedo Pastoral Lease which is located approximately 800 metres north of the application area at its closest point.
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>468: Medium woodland; salmon gum & goldfields blackbutt; and 555: Hummock grasslands, mallee steppe; red mallee over spinifex, <i>Triodia scariosa</i> (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by Botanica Consulting (Botanica) during October 2015 and May 2018. The following twelve vegetation associations were recorded within the application area (Botanica, 2018):</p> <p>Clay-Loam Plain</p> <ul style="list-style-type: none"> • CLP-CFW1: Low open forest of <i>Casuarina pauper</i> over mid open shrubland of <i>Acacia hemiteles</i> and low open shrubland of <i>Olearia muelleri</i> / <i>Scaevola spinescens</i> on clay-loam plain; • CLP-CFW2: Low open woodland of <i>Casuarina pauper</i> over mid chenopod shrubland of <i>Maireana sedifolia</i> / <i>Maireana pyramidata</i> and low open for bland of <i>Sclerolaena diacantha</i> on clay-loam plain; • CLP-EW1: Mid woodland of <i>Eucalyptus salubris</i> over mid shrubland of <i>Eremophila scoparia</i> and low open shrubland of <i>Olearia muelleri</i> / low open forbland of <i>Sclerolaena diacantha</i> on clay-loam plain; • CLP-EW2: Mid woodland of <i>Eucalyptus clelandiorum</i> / <i>Eucalyptus transcontinentalis</i> over mid open shrubland of <i>Acacia hemiteles</i> / <i>Eremophila caperata</i> and low open shrubland of <i>Eremophila parvifolia</i> / <i>Olearia muelleri</i> on clay-loam plain; • CLP-EW3: Mid woodland of <i>Eucalyptus salmonophloia</i> over mid open shrubland of <i>Acacia hemiteles</i> / <i>Eremophila scoparia</i> and low open shrubland of <i>Ptilotus obovatus</i> on clay-loam plain; • CLP-EW4: Low open forest of <i>Eucalyptus ravida</i> over mid sparse shrubland of <i>Eremophila scoparia</i> and low chenopod shrubland of <i>Maireana oppositifolia</i> / low shrubland of <i>Ptilotus obovatus</i> on clay-loam plain; • CLP-EW5: Mid open woodland of <i>Eucalyptus salmonophloia</i> over mid sparse shrubland of <i>Eremophila interstans</i> subsp. <i>virgata</i> and low chenopod shrubland of <i>Maireana sedifolia</i> / <i>Atriplex nummularia</i> subsp. <i>spathulata</i> on clay-loam plain; • CPL-EW/MWS1: Low woodland of <i>Eucalyptus clelandiorum</i> / Open mallee woodland of <i>Eucalyptus griffithsii</i>/ <i>Eucalyptus oleosa</i> over mid open shrubland of <i>Eremophila caperata</i> and low open shrubland of <i>Scaevola spinescens</i>/ <i>Senna artemisioides</i> subsp. <i>filifolia</i> on clay-loam plain; <p>Closed Depression</p> <ul style="list-style-type: none"> • CD-CSSSF1: Isolated <i>Eucalyptus clelandiorum</i> / <i>Eucalyptus celastroides</i> over mid sparse shrubland of <i>Melaleuca lateriflora</i> and samphire shrubland of <i>Tecticornia disarticulate</i> / <i>Tecticornia halocnemoides</i> in closed depression; <p>Hillslope</p> <ul style="list-style-type: none"> • HS-EW1: Mid woodland <i>Eucalyptus clelandiorum</i> / <i>Eucalyptus oleosa</i> over mid open shrubland of <i>Eremophila caperata</i> and low sparse shrubland of <i>Cratystylis conocephala</i> / <i>Eremophila pustulata</i> on hillslope;

Characteristic	Details
	<ul style="list-style-type: none"> HS-EW2: Mid open woodland of <i>Eucalyptus salubris</i> / <i>Eucalyptus clelandiorum</i> over mid sparse shrubland of <i>Eremophila</i> sp. Mt Jackson (G.J. Keighery 4372) and low sparse shrubland of <i>Cratystylis subspinescens</i> on hillslope; and <p>Open Depression</p> <ul style="list-style-type: none"> OD-EW1: Mid woodland of <i>Eucalyptus salmonophloia</i> over mid open shrubland of <i>Acacia hemiteles</i> / <i>Eremophila scoparia</i> and low open shrubland of <i>Ptilotus obovatus</i> in open depression. <p>There are also areas which have been mapped as cleared from mining disturbance.</p>
Vegetation condition	<p>The vegetation survey by Botanica (2018) indicates the vegetation within the proposed clearing area is in very good to completely degraded (Keighery, 1994) condition. There are significant portions of the application area which have been previously cleared for mining activities.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>
Climate and landform	The application area is mapped within elevations of 410-430 metres AHD. The annual average rainfall (Kalgoorlie) is 265.6 millimetres (BoM, 2022).
Soil description	<p>The soils of the application area are broadly mapped as soil types BB5, Mx40 and Mx43 (Northcote et al., 1960-68; GIS Database). The soil types are described as (Northcote et al., 1960-68):</p> <ul style="list-style-type: none"> BB5: Rocky ranges and hills of greenstones - basic igneous rocks: chief soils seem to be shallow calcareous loamy soils, with shallow brown and grey-brown calcareous earths and below which weathered rock occurs at shallow depths; Mx43: Gently undulating valley plains and pediments; some outcrop of basic rock: chief soils are alkaline red earths with limestone or limestone nodules at shallow depth on gently sloping slightly concave plains with low gentle rises; and Mx40: Flat to undulating valley plains and pediments; some rock outcrop: chief soils are alkaline and neutral red earths, often with a surface scatter of gravel.
Land degradation risk	There are no areas mapped as having a high risk of salinity, waterlogging or acid sulphate soils (GIS Database).
Waterbodies	The desktop assessment and aerial imagery indicated that several minor, non-perennial watercourses transect the area proposed to be cleared.
Hydrogeography	The application area is not within any public drinking water source areas. The mapped groundwater salinity is 14,000-35,000 milligrams per litre total dissolved solids which is described as saline (GIS Database).
Flora	There are no records of any Threatened or Priority flora within the application area (Botanica, 2018; GIS Database). There are records of eight priority flora species within the local area (20 kilometres) (GIS Database).
Ecological communities	There are no records of any Threatened or Priority Ecological Communities (TEC/PEC) within the application area (GIS Database). There are no known TECs or PECs within the local area (20 kilometres).
Fauna	There are no records of any conservation significant fauna species within the local area (20 kilometre radius).

A.2. Flora analysis table

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

Species name	Conservation status	Suitable habitat features ? [Y/N]	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]
<i>Angianthus prostratus</i>	Priority 3	N	N	<20	10	Y
<i>Atriplex lindleyi</i> subsp. <i>conduplicata</i>	Priority 3	Y	Y	<20	5	Y

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]
<i>Eremophila praecox</i>	Priority 2	Y	Y	<20	36	Y
<i>Notisia intonsa</i>	Priority 3	Y	Y	<20	26	Y
<i>Gompholobium cinereum</i>	Priority 3	Y	Y	<20	18	Y
<i>Xanthoparmelia subbarbatica</i>	Priority 1	N	Y	<20	7	Y
<i>Rumex crystallinus</i>	Priority 2	N	N	<20	3	Y
<i>Lepidium fasciculatum</i>	Priority 3	N	N	<20	13	Y
<i>Austrostipa burgensiana</i>	Priority 1	Y	Y	<20	1	Y
<i>Ricinocarpus digynus</i>	Priority 1	Y	Y	<20	9	Y

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?
Environmental value: biological values		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains potential habitat for several species of Priority flora. No species of Threatened or Priority flora have been recorded during the flora survey of the application area. There were four species of weed recorded within the application area.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> "Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."</p> <p><u>Assessment:</u></p> <p>The fauna habitat within the application area is common in the local area (20 kilometre radius). There are no records of conservation significant fauna species within the local area. The conservation significant species Malleefowl, Central Long-eared Bat, Peregrine Falcon have the potential to utilise the application area however, the vegetation is not likely to represent significant habitat for these 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). Flora surveys of the application area did not record any species of Threatened flora (Botanica, 2018).</p> <p>The area proposed to be cleared is unlikely contain habitat for flora species listed under the BC Act.</p>	Not likely to be at variance	No
<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>There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database). A flora and vegetation survey of the application area did not identify any TECs (Botanica, 2018).</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not at variance	No
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>There are no conservation areas within the application area. The nearest DBCA managed land is the former Credo Pastoral Lease which is located approximately one kilometre north of the application area (GIS Database). The application area is not part of an ecological linkage to this conservation 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
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>There are no permanent watercourses within the application area. Several minor ephemeral drainage lines are present, several of which have already been impacted by existing mining activities (GIS Database). None of the vegetation types within the application area were identified as growing in association with a watercourse (Botanica, 2018). The watercourses in the application area only flow immediately following significant rainfall and the proposed clearing is not likely to significantly impact surface water flow in the local area.</p>	May be at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The soils of the application area are broadly mapped as soil types BB5, Mx40 and Mx43 (Northcote et al., 1960-68; GIS Database). The majority of the application areas are mapped as Mx43 (GIS Database). The soil types are described as:</p> <ul style="list-style-type: none"> • BB5: Rocky ranges and hills of greenstones - basic igneous rocks: chief soils seem to be shallow calcareous loamy soils, with shallow brown and grey-brown calcareous earths and below which weathered rock occurs at shallow depths; • Mx43: Gently undulating valley plains and pediments; some outcrop of basic rock: chief soils are alkaline red earths with limestone or limestone nodules at shallow depth on gently sloping slightly concave plains with low gentle rises; and • Mx40: Flat to undulating valley plains and pediments; some rock outcrop: chief soils are alkaline and neutral red earths, often with a surface scatter of gravel. <p>The majority of the application area is relatively flat and the region receives relatively low annual rainfall (BoM, 2022; GIS Database). Although the removal of vegetation cover may result in localised erosion, the proposed clearing of up to 300 hectares of native vegetation within a boundary of approximately 1,897 hectares, is unlikely to cause appreciable land degradation.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). There are no permanent watercourses or wetlands within the area proposed to clear (GIS Database). Creek lines in the region are dry for</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>most of the year, only flowing briefly immediately following significant rainfall (Kern, 1995). The proposed clearing is unlikely to result in significant changes to surface water quality.</p> <p>The groundwater within the application area is between 14,000 – 35,000 milligrams per litre of Total Dissolved Solids. This is considered to be saline water. It would not be expected that the proposed clearing would cause salinity levels within the application or surrounding area to alter.</p>		
<p>Principle (j): <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The climate of the region is semi-arid, with a low average rainfall of approximately 265 millimetres per year, and average annual pan evaporation rates of 2,400 millimetres (BoM, 2022). There are no permanent watercourses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.</p>	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

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

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

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

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

Appendix D. Sources of information

D.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- 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
- Regional Parks (DBCA-026)
- 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:

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

D.2. References

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4. Glossary

Acronyms:

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

Definitions:

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

T **Threatened species:**

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

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

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

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**

Threatened species considered to be “facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”.

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

EN Endangered species

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

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

VU Vulnerable species

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

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

Extinct Species:

EX Extinct species

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

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

EW Extinct in the wild species

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

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

Specially protected species:

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

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

MI Migratory species

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

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

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

CD Species of special conservation interest (conservation dependent fauna)

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

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

OS

Other specially protected species

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

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

P

Priority species:

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

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

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1

Priority One - Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2

Priority Two - Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3

Priority Three - Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4

Priority Four - Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.
- (e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
- (i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.
- (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.