

# Clearing Permit Decision Report

## 1. Application details and outcomes

### 1.1. Permit application details

Permit number:	10259/1
Permit type:	Purpose Permit
Applicant name:	Liontown Resources Limited
Application received:	4 July 2023
Application area:	146.3 hectares
Purpose of clearing:	Mineral production and associated activities
Method of clearing:	Mechanical Removal
Tenure:	General Purpose Lease 36/52 Mining Leases 36/265, 36/459, 36/460, 36/696
Location (LGA area/s):	Shire of Leonora
Colloquial name:	Kathleen Valley Lithium-Tantalum Project

### 1.2. Description of clearing activities

Liontown Resources Limited proposes to clear up to 146.3 hectares of native vegetation within a boundary of approximately 990 hectares, for the purpose of mineral production and associated activities. The project is located approximately 50 kilometres north of Leinster, within the Shire of Leonora.

The application is to allow for the development of supporting infrastructure for mining operations of the Kathleen Valley Lithium-Tantalum Project. Initially the proponent intended to amend clearing permit CPS 9591/1 to increase the application area and the amount of clearing allowed. However, given the proposed increase was too large, a new clearing permit application had to be submitted. Up until 30 June 2023 a total of 306.055 hectares have been cleared under CPS 9591/1 (Liontown, 2023b).

### 1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	16 November 2023
Decision area:	146.3 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 4 July 2023. DMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix F), information from a flora and vegetation survey (Appendix E), the clearing principles set out in Schedule 5 of the EP Act (Appendix D), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- impacts to conservation significant flora;
- impacts to a Priority Ecological Community;
- impacts to vegetation growing in, or in association with, an environment associated with a watercourse; and
- potential land degradation in the form of wind erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- limiting the amount of priority flora to be taken;
- avoid clearing riparian vegetation where possible and maintain waterflow where clearing occurs in a watercourse; and
- commence construction no later than six months after undertaking clearing to reduce the risk of erosion.

## 2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)

The key guidance documents which inform this assessment are:

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

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The supporting document provided by the applicant (Liontown, 2023a) states that management measures to reduce impacts to Priority flora comprise:

- design of the Project to avoid significant flora where practicable;
- utilising existing disturbed areas and locating infrastructure to avoid *Grevillea inconspicua* and *Hemigenia exilis* where possible;
- managing clearing via an internal Land Clearing Procedure;
- clearly delineating the clearing area with survey pegs and flagging tape to ensure only that required for a safe working area is cleared; and
- weed hygiene practices have been implemented and site weed control will be conducted as required.

Potential habitat for short-range endemics such as isolated outcrops, caves, and drainage features have been avoided (MBS, 2023). Additionally, the proponent excised a proposed crossing at the west of the application area that would impact Jones Creek. This crossing was intended to be utilised to supply power and water to the operations south of Jones Creek. However, the project was redesigned to mitigate impacts to Jones Creek by lifting the powerlines over the creekline and all additional pipelines will follow the existing creek crossing at the east of the application area (pers. comm., Matthew Holt, Liontown Resources Limited, 31 July 2023).

The original application requested the clearing of up to 582.6 hectares within a boundary of approximately 1,220 hectares. The proponent later reduced the application area and the amount of clearing requested to 146.3 hectares within a boundary of approximately 990 hectares. As a result of this reduction, the impacts to Priority flora were also reduced from clearing up to 1,437 individuals of *Grevillea inconspicua* to clearing up to 500 individuals instead.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) 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 contains the two Priority flora species listed below:

- *Grevillea inconspicua* (P4)

There were 6,082 individuals of this species recorded in the survey area (MBS, 2023). However, 724 individuals of this species were removed as part of clearing permit CPS 9591/1 (Liontown, 2023b), which allowed the clearing of 19 percent of the recorded population. This clearing left a total population of 5,358 individuals of *Grevillea inconspicua*. Out of these records, 2,730 individuals are inside of the application area (MBS, 2023) but the proponent has indicated that only 500 individuals of *G. inconspicua* will be cleared for this project (pers. comm., Matthew Holt, Liontown Resources Limited, 30 October 2023). Clearing of 9.3 percent of the 5,358 plants mapped within the survey area is unlikely to have a significant impact for the species. Additionally, the location of the population of *G. inconspicua* within the application area is already highly disturbed as can be seen in Figure 3 Appendix E. It is unlikely that the remaining individuals inside the application area would survive as they would be impacted by dust, erosion, and vehicular movement of the already ongoing mining operations. Any subsequent amendments to take more individuals of this population should take into account c

- *Hemigenia exilis* (P4)

There were 470 individuals of this species recorded in the survey area (MBS, 2023). Out of these records, 50 individuals are located inside of the application area and within the proposed clearing footprint (MBS, 2023). Clearing of 10.6 percent of the 470 plants located within the survey area is likely to have significant local impacts but is unlikely to be significant to the conservation of this species (DBCA, 2023). The location of the population of *Hemigenia exilis* within the application area is already highly disturbed as can be seen in Figure 3 Appendix E. It is unlikely that the remaining individuals inside the application area would survive as they would be impacted by dust, erosion, and vehicular movement of the already ongoing mining operations.

Additionally, there are five Priority flora species that have the possibility to occur within the application area due to the distance of the closest record to the application area and to suitable soils and vegetation for these flora species being present within the application area:

- *Anacampseros* sp. Eremaean (P1)

This species is known from eight herbarium records across two IBRA regions. One of these records is located within a protected area with Gazettal in progress (Western Australian Herbarium, 1998-). It is possible this taxon does occur within the application area and if present, given that it is only known from very few locations, impacts could be both locally and regionally significant (DBCA, 2023). This species is labelled as possible to occur within the application area (Botanica Consulting, 2019). Given it is a perennial herb which flowers in September, it could have been recorded during the initial reconnaissance flora/vegetation survey conducted by Botanica Consulting during November 2018. However, this species was not recorded within the application area.

- *Eremophila pungens* (P4)

This species is known from 45 herbarium records across three IBRA regions. Several of these records are located within protected areas (Western Australian Herbarium, 1998-). It is possible that this taxon does occur within the application area although given its current range any potential impacts are unlikely to be significant to the conservation of this species (DBCA, 2023).

- *Pigea* sp. Chloroxantha (P3)

This species is known from 25 herbarium records within one IBRA regions. None of these records are located within protected areas (Western Australian Herbarium, 1998-). It is possible that the taxon does occur within the application area and given that it is only known from very few locations, if it is located within the application area, impacts could be locally and regionally significant (DBCA, 2023). Given it is a perennial shrub which flowers from August to October, it could have been recorded during the initial reconnaissance flora/vegetation survey conducted by Botanica Consulting during November 2018. However, this species was not recorded within the application area.

- *Thryptomene* sp. Leinster (P3)

This species is known from 25 herbarium records across two IBRA regions. Three of these records are located within protected areas (Western Australian Herbarium, 1998-). Given the species does not have a restricted distribution, impacts to this species from the proposed clearing, are unlikely to be significant.

- *Verticordia jamiesonii* (P3)

This species is known from 34 herbarium records across five IBRA regions. Two of these records are located within protected areas (Western Australian Herbarium, 1998-). Given the wide distribution of these species, impacts to this species from the proposed clearing, are unlikely to be significant.

#### Conclusion

Based on the above assessment, the proposed clearing will result in impacts to Priority flora.

For the reasons set out above, it is considered that the impacts of the proposed clearing on Priority flora can be managed by limiting the clearing of *Grevillea inconspicua*.

#### Conditions

To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- Flora management condition to limit the number of *Grevillea inconspicua* to be cleared to 500 individuals.

### 3.2.2. Biological values (Ecological Communities) – Clearing Principle (a)

#### Assessment

The application area intersects Priority 1 Ecological Community 'Violet Range (Perseverance Greenstone Belt) (BIF)'. According to the vegetation survey conducted by Botanica Consulting (2021a) there are three vegetation communities (RH-AFW1, RH-AS1 and RH-AS2) within the application area that are representative of the PEC. These vegetation communities occupy 185.736 hectares of the application area and 46.005 hectares of the proposed clearing footprint. Direct impacts to the PEC are unlikely to be significant. However, cumulative and secondary impacts to the PEC could be very high as the entirety of the PEC is within active mining leases (DBCA, 2023). There is already an exclusion zone around the application area determined by the Tjiwarl Traditional members (pers. comm., Matthew Holt, Liantown Resources Limited, 9 November 2023). This exclusion zone (see Figure 4 in Appendix E) limits the amount of clearing that can be undertaken within the application area and subsequently within the PEC. Secondary impacts related to the clearing of native vegetation are fragmentation and the spread of weeds and dieback. Weeds and dieback have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

#### Conclusion

Based on the above assessment, the proposed clearing will result in impacts to a Priority Ecological Community.

For the reasons set out above, it is considered that the impacts of the proposed clearing on the PEC can be managed by taking steps to minimise the risk of the introduction and spread of weeds and dieback.

#### Conditions

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

- Weed and dieback management condition will minimise the risk of spreading weeds and dieback.

### 3.2.3. Biological values (fauna) – Clearing Principle (b)

#### Assessment

One peregrine falcon (*Falco peregrinus*) was observed just south of the study area during the fauna survey conducted by Botanica Consulting (2019). This species inhabits a wide range of habitats including forest, woodlands, wetlands, and open country, which are seen across the wider region (Botanica Consulting, 2019). Therefore, the proposed clearing is unlikely to represent a significant impact for peregrine falcon habitat. The targeted survey for the black-flanked rock wallaby conducted in 2021 identified all habitat types within the application area are likely unsuitable for the species and no black-flanked rock wallabies were observed during the field survey (Botanica Consulting, 2021b).

Advice from DBCA (2023) indicated the application area may contain suitable habitat for the species listed below:

- Arid bronze azure butterfly (CR)

The mapped Eucalypt Woodlands (OD-EW1) vegetation community within the application area appears to represent suitable habitat for the Arid Bronze Azure Butterfly (DBCA, 2023). This habitat is only mapped in the crossing located in Jones Creek. It has been established by corresponding with Liantown Resources that this habitat has already been developed under clearing permit CPS 9591/1 (pers. comm., Matthew Holt, Liantown Resources Limited, 31 July 2023).

- Great desert skink (VU)

The great desert skink occupies a range of vegetation types with the major habitat being sandplain and adjacent swales that support hummock grassland and scattered shrubs. In the Tanami Desert, it also occupies paleodrainage lines on lateritic soils supporting *Melaleuca* shrubs (Northern Territory Government, 2012). The flora/vegetation surveys did not describe any of the vegetation types or habitats as sandplains, swales that support hummock grassland and scattered shrubs, or containing paleodrainage lines on lateritic soils supporting *Melaleuca* shrubs. Therefore, it is unlikely that the species would occur in the application area or that the habitats present are significant to this species.

- Long-tailed dunnart (P4)

The likelihood for this species has been recorded as "possibly occurs on rocky hillslopes and plains" (Botanica Consulting, 2019). The application area contains habitat described as rocky hillslopes and plains (Botanica Consulting, 2019); however, a recent targeted fauna assessment was undertaken in the application area, and it was reported that no long-tailed dunnarts were sighted, nor any signs such as tracks, scats, or burrows (Western Ecological, 2023). Additionally, the survey area lacks areas of rocky habitat in the form of banded ironstone where there are cracks and crevices in which this species could shelter and there is no suitable habitat in the form of rugged rocky ridges. The Stony Plain habitat is considered to be too open and lacking enough vegetation to provide any habitat or shelter for the species (Western Ecological, 2023).

- Malleefowl (VU)

The vegetation types recorded within the application area appear to be suitable for malleefowl. Malleefowl habitat is described as scrublands and woodlands dominated by mallee and wattle species (Botanica Consulting, 2019). Summary of vegetation types within the survey area indicates that *Acacia* (wattle) woodlands are present over most of the proposed clearing area (Botanica Consulting, 2019). However, a recent targeted fauna assessment was undertaken in the area to be cleared, and it was reported that no malleefowl were sighted, nor were their mounds or tracks (Western Ecological, 2023). Additionally, the habitats present in the survey area are unsuitable because they are too open and have very little to no vegetation cover in the upper storey for malleefowl to build their mounds. There are also very few to no shrub species in the midstorey habitats of the survey area which might provide a food source. This current assessment has demonstrated that there is an absence of suitable habitat in the survey area and close by for malleefowl to construct their mounds, or to forage in (Western Ecological, 2023).

- Moriarty's trapdoor spider (P2)

This species is known from one single record collected in 1962 at Kathleen Valley (GIS Database). The WA Museum have confirmed that there is only one specimen that is the source of this record. The exact location of the single occurrence record has not been able to be determined due to the age of the record, however, the location description is Kathleen Valley (DBCA, 2023). Little is known about the habitat or ecology of Moriarty's trapdoor spider, however other members of the *Kwonkan* genus are short-range endemics with many having very short ranges. If present within the disturbance area, impacts may be significant at the species level (DBCA, 2023). A recent targeted fauna assessment was undertaken in the application area, and it was reported that the burrows of Mygalomorph spiders were not observed (Western Ecological, 2023).

- Night parrot (CR)

Night parrot habitat is comprised of long unburnt spinifex. Even though the application area has not had any fires recorded (GIS Database), none of the vegetation or habitat types within the application area contain spinifex or *Triodia* grasslands (Botanica Consulting, 2019). For this reason, it is unlikely that the application area represents significant habitat for the night parrot and this species is unlikely to occur within the application area.

- Short-range endemics (SREs)

An SRE survey was not undertaken for the project. However, potential habitat for SREs such as isolated outcrops, caves, and drainage features have been avoided (MBS, 2023). For this reason, it is unlikely that the application area contains significant habitat for SREs.

All of the habitats identified within the application area are considered locally common and widespread (MBS, 2023).

#### Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on conservation significant fauna and their habitats does not constitute a significant impact.

#### Conditions

No fauna management conditions required.

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

The clearing permit application was advertised on 7 July 2023 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim over the area under application (DPLH, 2023). This claim has been determined by the Federal Court on behalf of the claimant group (Tjiwarl). 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 13 registered Aboriginal Cultural Heritage sites within the application area (DPLH, 2023). It is the proponent's responsibility to comply with the *Aboriginal Cultural Heritage Act 2021* and ensure that no Aboriginal Cultural Heritage sites 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. Additional information provided by applicant

Summary of comments	Consideration of comment
New shapefile of reduced application area	This new shapefile was used to assess the potential impacts of the new proposal.

## Appendix B. Site characteristics

### B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It is surrounded by the landscape of the Murchison bioregion and various mining operations in the area (GIS Database).
Ecological linkage	According to aerial imagery, the application area does not form part of any formal or informal ecological linkages (GIS Database).
Conservation areas	The application area is not located within any known or mapped conservation areas. The closest mapped conservation area is Wanjarri Nature Reserve which is located 5.3 kilometres northeast of the application area (GIS Database).
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations: 18: Low woodland; mulga (<i>Acacia aneura</i>); and 39: Shrublands; mulga scrub (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by Botanica Consulting during November, 2018. The following vegetation types were recorded within the application area (Botanica Consulting, 2019):</p> <ul style="list-style-type: none"> <li>• <b>CLP-AFW1:</b> Low woodland of <i>Acacia incurvaneura</i> over mid open shrubland of <i>Eremophila galeata</i> and low open shrubland of <i>Ptilotus obovatus</i>/<i>Senna artemisioides</i> subsp. <i>helmsii</i> on clay-loam plains</li> <li>• <b>CLP-AFW2:</b> Low woodland of <i>Acacia caesaneura</i>/<i>A. incurvaneura</i> over mid open shrubland of <i>Senna artemisioides</i> subsp. <i>helmsii</i> and low open tussock grassland of <i>Eragrostis eriopoda</i>/<i>Monachather paradoxus</i> on clay-loam plains</li> <li>• <b>OD-AFW1:</b> Low woodland of <i>Acacia caesaneura</i>/<i>A. incurvaneura</i> over low open shrubland of <i>Ptilotus obovatus</i>/<i>Solanum lasiophyllum</i>/<i>Senna artemisioides</i> and low tussock grassland of <i>Aristida contorta</i>/<i>Enneapogon caerulescens</i> in drainage depressions</li> <li>• <b>OD-AOW1:</b> Low open woodland of <i>Acacia effusifolia</i> over mid open shrubland of <i>Eremophila galeata</i> and low open tussock grassland of <i>Eragrostis eriopoda</i>/<i>Monachather paradoxus</i> in drainage depressions</li> <li>• <b>OD-EW1:</b> Low open forest of <i>Eucalyptus camaldulensis</i> over tall open shrubland of <i>Acacia burkittii</i> and low tussock grassland of <i>Themeda triandra</i> in drainage depressions</li> <li>• <b>RH-AFW1:</b> Low woodland of <i>Acacia caesaneura</i>/<i>Acacia incurvaneura</i> over mid shrubland of <i>Santalum lanceolatum</i>/<i>Scaevola spinescens</i> and low open tussock grassland of <i>Enneapogon caerulescens</i> on rocky hillslopes</li> <li>• <b>RH-AS1:</b> Tall sparse shrubland of <i>Acacia quadrimarginea</i> over low sparse shrubland of <i>Eremophila galeata</i> and low tussock grassland of <i>Cymbopogon ambiguus</i> on rocky hillslopes</li> <li>• <b>RH-AS2:</b> Mid open shrubland of <i>Acacia balsamea</i> over low open shrubland of <i>Ptilotus obovatus</i> and low tussock grassland of <i>Aristida contorta</i> on rocky hillslopes</li> <li>• <b>RH-CFW1:</b> Low woodland of <i>Casuarina pauper</i> over low shrubland of <i>Ptilotus obovatus</i>/<i>Senna artemisioides</i> subsp. <i>helmsii</i> on rocky hillslopes</li> <li>• <b>RP-AOW1:</b> Low open woodland of <i>Acacia incurvaneura</i> over mid open shrubland of <i>Eremophila galeata</i> and low open shrubland of <i>Ptilotus obovatus</i>/<i>Senna artemisioides</i> subsp. <i>helmsii</i> on rocky plains</li> <li>• <b>RP-OS1:</b> Tall sparse shrubland of <i>Hakea lorea</i> over low open shrubland of <i>Ptilotus obovatus</i>/<i>Scaevola spinescens</i> and closed tussock grassland of <i>Enneapogon polyphyllus</i> on rocky plains.</li> </ul>
Fauna habitats	<p>A flora and vegetation survey was conducted over the application area by Botanica Consulting during November, 2018. The following habitat types were recorded within the application area (Botanica Consulting, 2019):</p> <ul style="list-style-type: none"> <li>• Clay-Loam Plain: <i>Acacia</i> forests and woodlands</li> <li>• Open Depression: <i>Acacia</i> forests and woodlands/<i>Acacia</i> open woodlands/<i>Eucalypt</i> woodlands</li> <li>• Rocky Hillslope: <i>Acacia</i> forests and woodlands/<i>Acacia</i> shrublands/<i>Casuarina</i> forests and woodlands</li> <li>• Rocky Plain: <i>Acacia</i> open woodlands/ other shrublands</li> </ul>
Vegetation condition	The vegetation survey (Botanica Consulting, 2019) and aerial imagery indicate the vegetation within the proposed clearing area is in Very Good to Good (Trudgen, 1991) condition.

Characteristic	Details
	The full Trudgen (1991) condition rating scale is provided in Appendix D. Vegetation and fauna mapping are available in Appendix E.
Climate and landform	The application area is located in an arid zone with an average annual rainfall of approximately 248.4 millimetres (BoM, 2023).
Soil description	The soil within the application area is mapped as soil units BE6, BE8, Fa7. These soil units are described by Northcote et al. (1960-68) as follows: <b>BE6:</b> Extensive flat and gently sloping plains, which sometimes have a surface cover of gravels and on which red-brown hardpan frequently outcrops: chief soils are shallow earthy loams. <b>BE8:</b> Partially dissected pediments extending out from areas of unit Fa7; there may be a surface cover of gravels. Earthy loams are dominant; with red-brown hardpan at shallow depth also present. <b>Fa7:</b> Greenstone hills and low ranges with some slate and basalt: dominant soils are shallow stony earthy loams on the steep slopes while overlying red-brown hardpan occur on the stony pediments.
Land systems and erosion risk	The application area falls within the Bevon, Laverton, Monk, Sunrise, Violet, Wilson, and Windarra land systems (DPIRD, 2023). These land systems are described by Pringle et al. (1994) as follows: <b>Bevon land system:</b> Irregular low ironstone hills with stony lower slopes supporting mulga shrublands. Minor areas with texture contrast soils on breakaway footslopes and narrow drainage tracts are susceptible to soil erosion, particularly if perennial shrub cover is substantially reduced or the soil surface is disturbed. <b>Laverton land system:</b> Greenstone hills and ridges with acacia shrublands. Stone mantles protect most of this land system against soil erosion, the exception being narrow drainage tracts, which are mildly susceptible to water erosion. <b>Monk land system:</b> Hardpan plains with occasional sandy banks, supporting mulga tall shrublands and wanderrie grasses. Drainage tracts are mildly susceptible to water erosion. <b>Sunrise land system:</b> Stony plains supporting mulga shrublands. This land system is generally not susceptible to soil erosion, partly as a consequence of extensive protective stone mantles. <b>Violet land system:</b> Undulating stony and gravelly plains and low rises, supporting mulga shrublands. Abundant mantles provide effective protection against soil erosion over most of this land system, except where the soil surface has been disturbed, for example by the construction of tracks and gridlines. In such circumstances, the soil becomes moderately susceptible to water erosion. Narrow drainage tracts are mildly susceptible to water erosion. <b>Wilson land system:</b> Large creeks with extensive distributary fans, supporting mulga and halophytic shrublands. This land system is second only to Monitor land system in terms of the proportion of its area that is now severely degraded and eroded. The drainage tracts, alluvial fans and hardpan plains are most extensively eroded. <b>Windarra land system:</b> Stony plains with quartz mantles, supporting <i>acacia-eremophila</i> shrublands. Hardpan plains and drainage floors are mildly susceptible to soil erosion. Elsewhere, soil mantles provide effective protection against erosion.
Waterbodies	The desktop assessment and aerial imagery indicated that various minor, and one major, non-perennial watercourses transect the area proposed to be cleared (GIS Database).
Hydrogeography	The application area is located within the Goldfields Groundwater Area, which is legislated by the <i>R/VI Act 1914</i> . The mapped groundwater salinity is 1,000-3,000 milligrams per litre total dissolved solids which is described as brackish (GIS Database).
Flora	Flora surveys conducted by Botanica Consulting (2019; 2021a) and O'kane (2023) recorded two Priority 4 species within the application area. No Threatened flora species were recorded within the application area (MBS, 2023).
Ecological communities	Three of the vegetation types present in the application area are considered to be representative of the Violet Range (Perseverance Greenstone Belt) vegetation complexes (Banded Ironstone Formation) Priority 1 Ecological Community (PEC) (Botanica Consulting, 2021a). No Threatened Ecological Communities (TEC) were recorded within the application area (MBS, 2023).
Fauna	There was one specially protected fauna species recorded within the application area (Botanica, 2019). There were no Threatened or Priority fauna species recorded within the application area (MBS, 2023).

## B.2. Flora analysis table

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

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Anacampseros</i> sp. Eremaean	P1	Y	Y	Y	4.5 km	8	N
<i>Austroparmelina macrospora</i>	P3	Y	N	N	9.8 km	53	N
<i>Bossiaea eremaea</i>	P3	N	N	N	8.9 km	18	N
<i>Eremophila pungens</i>	P4	Y	Y	Y	12.3 km	45	N
<i>Goodenia modesta</i>	P3	N	N	N	9.7 km	27	N
<i>Grevillea inconspicua</i>	P4	Y	Y	Y	0 km	61	Y
<i>Hemigenia exilis</i>	P4	Y	Y	Y	0 km	43	Y
<i>Hibbertia</i> sp. Sherwood Breakaways	P2	Y	N	Y	4.6 km	11	N
<i>Pigea</i> sp. Chloroxantha	P3	Y	Y	Y	3.6 km	25	N
<i>Swainsona katjarra</i>	P1	Y	Y	N	8.2 km	6	N
<i>Thryptomene</i> sp. Leinster	P3	Y	Y	Y	12.6 km	25	N
<i>Verticordia jamiesonii</i>	P3	Y	Y	Y	9.3 km	34	N

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

(Botanica Consulting, 2019; GIS Database)

### B.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Arid bronze azure butterfly	CR	Y	Y	368 km	22	N
Great desert skink	VU	N	N	10.7 km	194	N
Long-tailed dunnart	P4	Y	Y	74 km	288	Y
Malleefowl	VU	Y	Y	10.5 km	29530	Y
Moriarty's trap door spider	P2	Unknown	Unknown	1.4 km	2	Y
Night parrot	CR	N	N	300 km	206	N
Northern shield-backed trapdoor spider	P3	Unknown	Unknown	4.8 km	8425	Y
Peregrine falcon	OS	Y	Y	0 km	1756	Y

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

(Botanica Consulting, 2019; GIS Database)

### B.4. Ecological community analysis table

Community name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
Violet Range (Perseverance Greenstone Belt) (BIF)	P1	Y	Y	Y	0 km	Y

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

(Botanica Consulting, 2019; GIS Database)

## Appendix C. Assessment against the clearing principles



Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The application area contains two Priority 4 flora species and it intersects a Priority 1 Ecological Community ‘Violet Range (Perseverance Greenstone Belt) (BIF).</p>	At variance	<p>Yes</p> <p>Refer to Section 3.2.1 and 3.2.2, above.</p>
<p><u>Principle (b):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</i></p> <p><u>Assessment:</u></p> <p>No Threatened or Priority fauna species were recorded within the application area during the level 1 fauna survey (Botanica Consulting, 2019). The peregrine falcon (OS) was observed with one individual bird observed just south of the study area during the fauna survey conducted by Botanica Consulting (2019).</p>	Not likely to be at variance	<p>Yes</p> <p>Refer to Section 3.2.3</p>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>There are no known records of Threatened flora within the application area (GIS Database). Flora surveys of the application area did not record any species of Threatened flora (MBS, 2023).</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u></p> <p>There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database). Numerous flora and vegetation surveys of the local and regional area, including the application area, have not identified any TECs (MBS, 2023).</p>	Not likely to be at variance	No
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The application area falls within the Murchison Bioregion of the Interim Biogeographic Regionalisation of Australia (GIS Database). Over 99 per cent of the pre-European vegetation still exists in the Murchison Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 18 and 39 (GIS Database). These vegetation associations have not been extensively cleared as over 99 per cent of the pre-European extent of these vegetation associations remain uncleared at both the state and regional level (Government of Western Australia, 2019).</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 conservation area (Class A Wanjarri Nature Reserve) is approximately 5 kilometres northeast of the application area (GIS Database). Given the distance to Wanjarri Nature Reserve and that the application area is down gradient from the reserve (GIS Database), the proposed clearing is unlikely to have a significant impact on the environmental values of the Wanjarri Nature Reserve.</p>	Not likely to be at variance	No
<b>Environmental value: land and water resources</b>		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p>	At variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Assessment:</u></p> <p>There are several minor drainage lines and one major ephemeral watercourse (Jones Creek) within the application area (GIS Database). Jones Creek is recognised as being of cultural significance to the Traditional Owners and an exclusion zone has been applied as part of the agreement between the Tjiwarl Traditional Owners and Liontown. The application area has been designed to avoid Jones Creek and existing roads will be utilised to avoid disturbance from creek crossings (MBS, 2023). Only one crossing for Jones Creek is currently being constructed under the existing clearing permit (CPS 9591/1) at the approval of the Twijarl Aboriginal Corporation. This crossing is continuously monitored by Tjiwarl personnel until construction of the crossing is complete (pers. comm., Matthew Holt, Liontown Resources Limited, 31 July 2023). Impacts to drainage lines and Jones Creek can be managed through the implementation of a vegetation management condition.</p>		
<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>Land systems within the application area (described in section B.1) are not generally susceptible to erosion. However, soils on breakaway footslopes and narrow drainage tracts within these land systems are susceptible to soil erosion. Since the application area contains sloped landforms and drainage lines, a staged clearing condition will be placed on the clearing permit to minimise the impacts of soil erosion. This management measure will prevent clearing of native vegetation unless mineral production or associated activities are enacted within six months of the clearing.</p>	May be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>Given no permanent water courses, wetlands, or Public Drinking Water Source Areas are recorded within the application area (GIS Database), the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>There are no permanent water courses or wetlands recorded within the application area (GIS Database). Flood modelling undertaken for the proposed clearing, specifically for Jones Creek as the most significant watercourse within the application area, confirms that flooding impacts will be localised in extent and will not adversely impact areas adjacent to Jones Creek. Overall, the proposed clearing will have no detectable increased impact on flooding potential for Project area or its immediate surrounds (MBS, 2023).</p>	Not likely to be at variance	No

## Appendix D. Vegetation condition rating scale

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

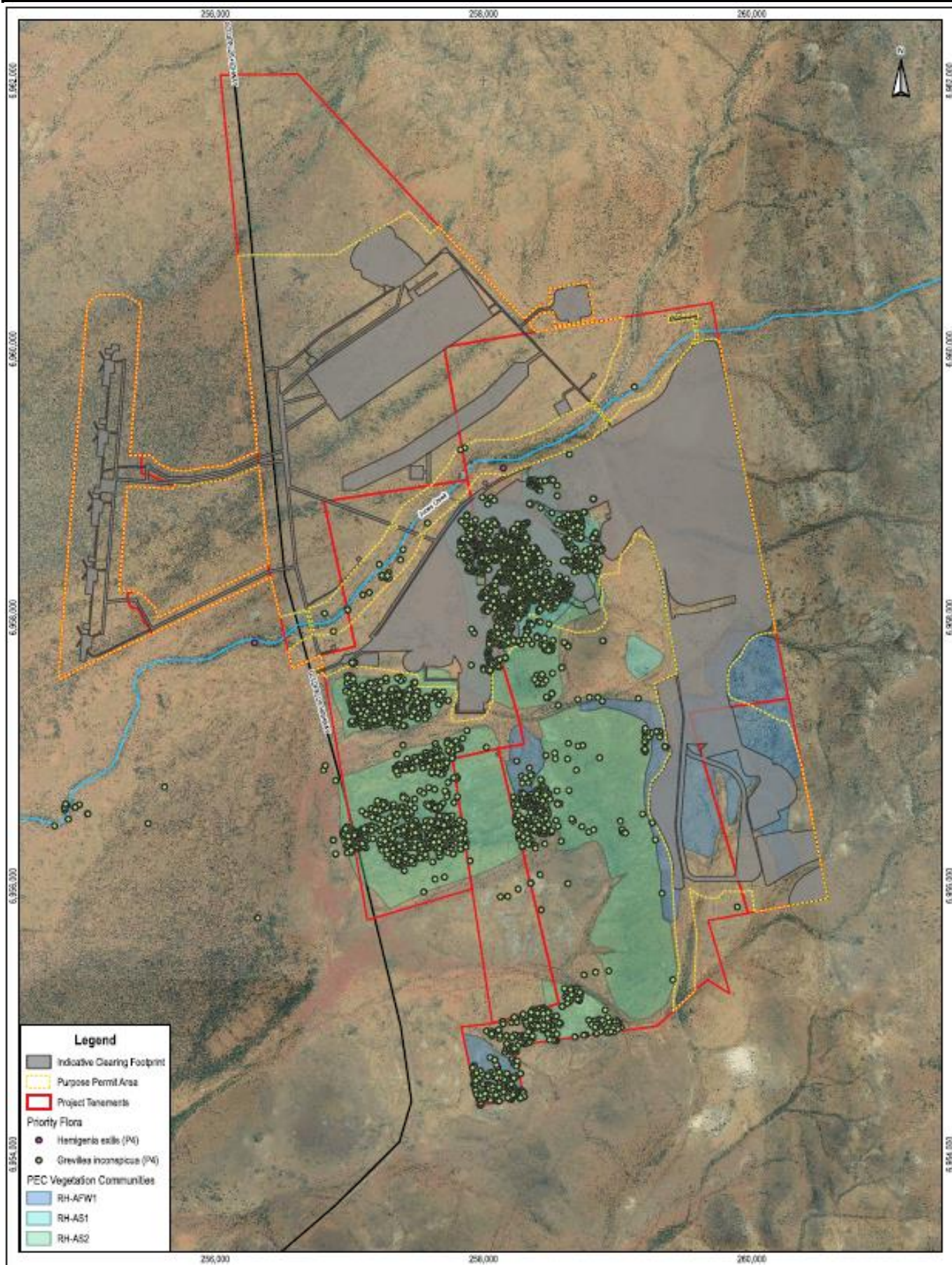
Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

### Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.

Condition	Description
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.





**Figure 1.** Locations of Priority flora and vegetation types representative of the PEC within the application area and the proposed clearing footprint.



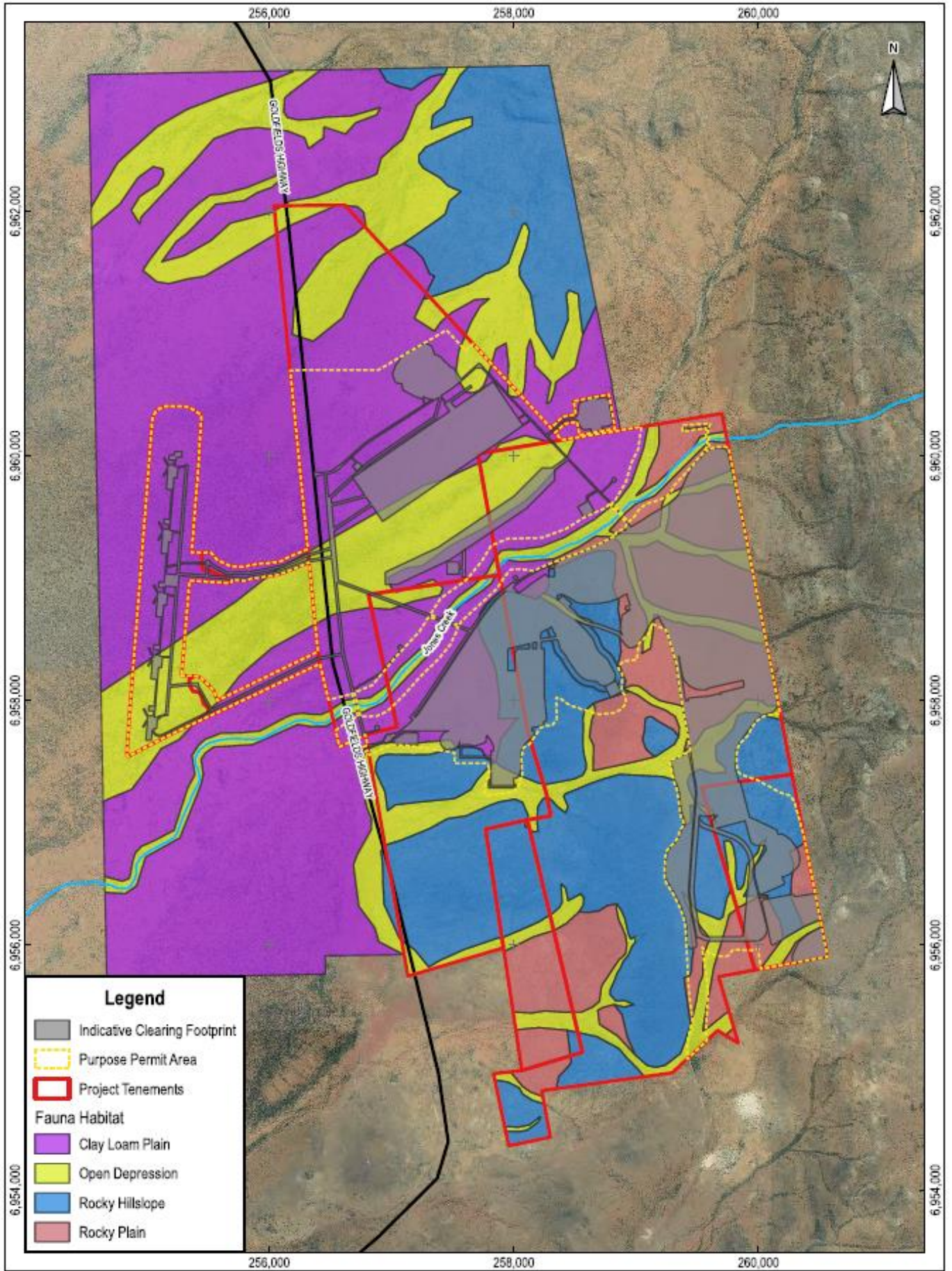


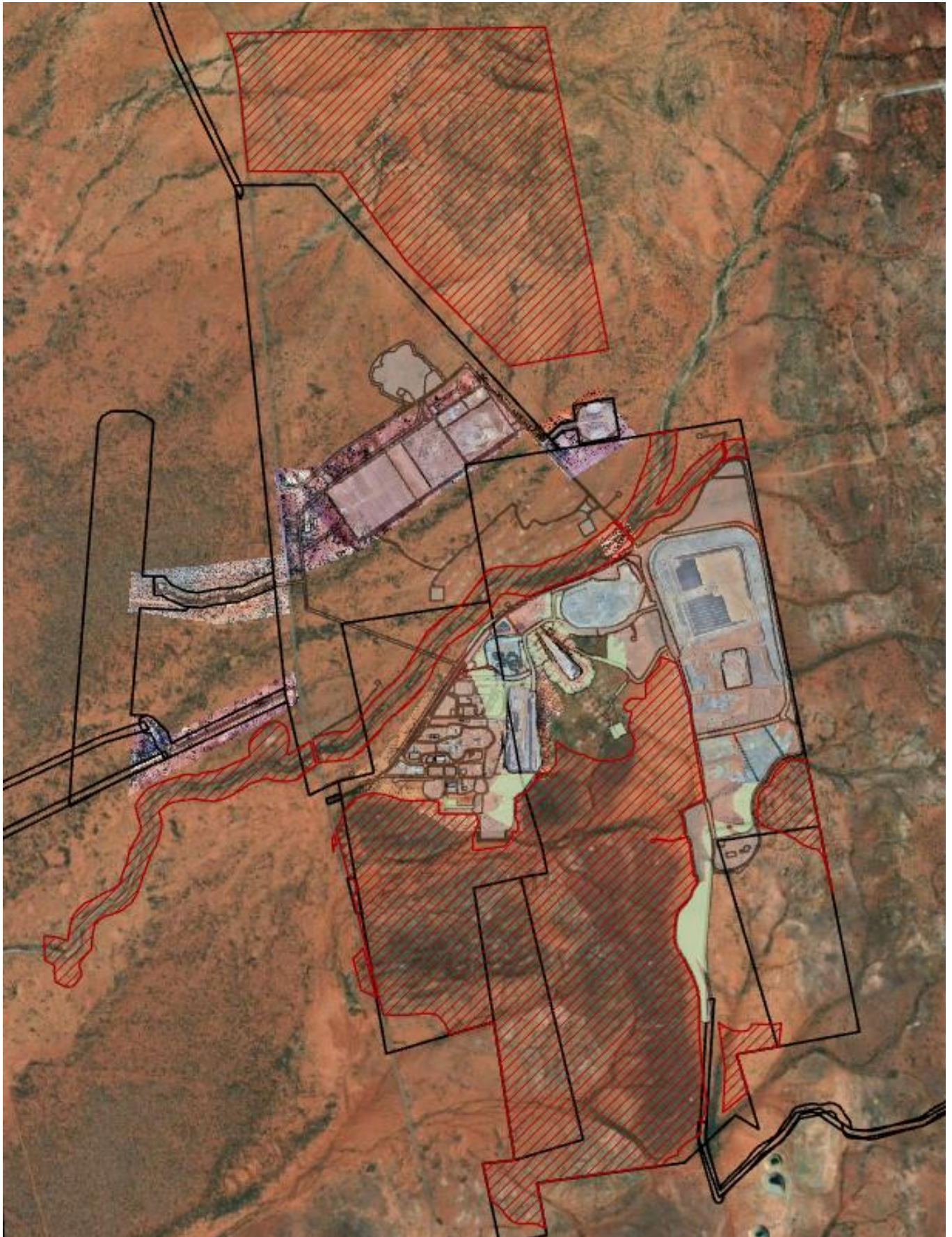
Figure 2. Map of fauna habitats within the application area.





**Figure 3.** Satellite imagery reflecting the clearing undertaken to date under CPS 9591/1.  
CPS 10259/1





**Figure 4.** Map showing the exclusion zone (red lines) set by the Tjiwarl.



## Appendix F. Sources of information

### F.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

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

### F.2. References

- Botanica Consulting (2019) Reconnaissance Flora/Vegetation & Level 1 Fauna Survey for Kathleen Valley Lithium Project. Unpublished report prepared for Liontown Resources Ltd by Botanica Consulting, March 2019.
- Botanica Consulting (2021a) Targeted Flora/Vegetation survey Kathleen Valley Project. Unpublished report for Liontown Resources Ltd by Botanica Consulting, July 2021.
- Botanica Consulting (2021b) Targeted Survey Black-Flanked Rock Wallaby, Kathleen Valley Project. Unpublished report for Liontown Resources Ltd by Botanica Consulting, July 2021.
- Bureau of Meteorology (BoM) (2023) Bureau of Meteorology Website – Climate Data Online, Leinster Aero. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 3 August 2023).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2023) Advice received in relation to Clearing Permit Application CPS 10259/1. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Western Australia, September 2023.
- Department of Environment Regulation (DER) (2014) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: [https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2\\_assessment\\_native\\_veg.pdf](https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf)
- Department of Planning, Lands and Heritage (DPLH) (2023) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 3 August 2023).
- Department of Primary Industries and Regional Development (DPIRD) (2023) NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia. URL: <https://dpiird.maps.arcgis.com/apps/webappviewer/index.html?id=662e8cbf2def492381fc915aaf3c6a0f> (Accessed 3 August 2023).
- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: [https://dwer.wa.gov.au/sites/default/files/Procedure\\_Native\\_vegetation\\_clearing\\_permits\\_v1.pdf](https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.pdf)
- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. Available from: [http://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey\\_Dec13.pdf](http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf)
- Environmental Protection Authority (EPA) (2016) Technical Guidance – Terrestrial Fauna Surveys. Available from: [https://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf](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. Available from: [https://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf](https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf)
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Liontown (2023a) Clearing permit application form, CPS 10259/1, received 4 July 2023.



- Liontown (2023b) Kathleen Valley Purpose Permit 9591/1 Annual Environmental Report. Unpublished report prepared for the Department of Mines, Industry Regulation and Safety by Liontown Resources Limited, July 2023.
- MBS (2023) Native Vegetation Clearing Permit Amendment (CPS 9591-1) Kathleen Valley Lithium-Tantalum Project. Report prepared for Liontown Resources Limited by MBS Environmental, June 2023.
- Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) Atlas of Australian Soils, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.
- Northern Territory Government (2012) Threatened Species of the Northern Territory – GREAT DESERT SKINK TJAKURA *Egernia kintorei*, December 2012.
- O’kane (2023) 9041-220 Kathleen Valley Lithium Project targeted Flora Survey Report. Prepared for Liontown Resources by O’Kane Consultants Pty Limited.
- Pringle, H J, Gilligan, S A, and van Vreeswyk, A M. (1994), *An inventory and condition survey of rangelands in the north-eastern Goldfields, Western Australia*. Department of Primary Industries and Regional Development, Western Australia, Perth. Technical Bulletin 87.
- Trudgen, M.E. (1991) Vegetation condition scale in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.
- Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions, Western Australia. <https://florabase.dpaw.wa.gov.au/> (Accessed 7 August 2023).
- Western Ecological (2023) Targeted Fauna Assessment – Kathleen Valley. Report prepared for Liontown Resources, October 2023.

## 4. Glossary

### Acronyms:

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

### Definitions:

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

#### T Threatened species:

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

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

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

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

- CR Critically endangered species**  
Threatened species considered to be “*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.
- Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.
- EN Endangered species**  
Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.
- Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.
- VU Vulnerable species**  
Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.
- Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

#### **Extinct Species:**

- EX Extinct species**  
Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).
- Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.
- EW Extinct in the wild species**  
Species that “*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).
- Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

#### **Specially protected species:**

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

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

- MI Migratory species**  
Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).
- Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

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

- CD Species of special conservation interest (conservation dependent fauna)**  
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).  
Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.
- OS Other specially protected species**  
Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).  
Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.
- P Priority species:**
- Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.
- Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.
- Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
- P1 Priority One - Poorly-known species**  
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
- P2 Priority Two - Poorly-known species**  
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
- P3 Priority Three - Poorly-known species**  
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
- P4 Priority Four - Rare, Near Threatened and other species in need of monitoring**  
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.  
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.  
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

**Principles for clearing native vegetation:**

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

- (b)** Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.
- (c)** Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (d)** Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.
- (e)** Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
- (f)** Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g)** Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (h)** Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
- (i)** Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.
- (j)** Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.