



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	9461/1
Permit type:	Purpose Permit
Applicant name:	Northern Star Resources Limited
Application received:	19 October 2021
Application area:	362 hectares
Purpose of clearing:	Haul Road Construction
Method of clearing:	Mechanical Removal
Tenure:	Mining Leases 36/35, 36/462, 36/473, 36/474, 36/504, 36/527, 36/541 Miscellaneous Licence 36/246
Location (LGA area/s):	Shire of Leonora
Colloquial name:	Orelia South Haul Road Project

1.2. Description of clearing activities

Northern Star Resources Limited proposes to clear up to 362 hectares of native vegetation within a boundary of approximately 1,229.95 hectares, for the purpose of Haul Road Construction.

The application will link the Orelia Mine to the Thunderbox Processing Plant (Northern Star, 2021).

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	24 February 2022
Decision area:	362 hectares (ha) 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 19 October 2021. DMIRS advertised the application for 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 (Appendix D) including the results of a flora and vegetation survey and fauna assessment (Appendix D), the clearing principles set out in Schedule 5 of the EP Act (Appendix B), 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; and
- potential impacts to riparian vegetation.

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; and
- avoid impacts to riparian vegetation and maintain surface water flows.

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 may include:

- *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

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. The Permit Holder has designed the proposed clearing to minimise clearing of vegetated areas and utilise existing cleared areas.

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 (see Appendix B), with exception of principle (f), identified the impacts of the proposed clearing are limited and able to be managed to be environmentally acceptable with standard avoid and minimise and hygiene management conditions. Principle (f) can be adequately managed through a watercourse management condition (see Appendix B).

3.2.1. Biological values - Clearing Principle (a)

Assessment

A reconnaissance survey has been conducted over the application area by Botanica (2021) during 24-25 March 2021. The vegetation of the application area is dominated by *Acacia* woodland and *Eucalyptus* mallee woodland (Botanica, 2021). No Threatened or Priority Ecological Communities were identified as potentially occurring within the application area and none of the vegetation types mapped and described are listed as Threatened or Priority Ecological Communities (Botanica, 2021; GIS Database).

A total of 82 flora species from 39 genera and 25 families were recorded within the application area during the field assessment (Botanica, 2021). No conservation significant flora species were identified during the survey, however there is a potential for multiple Priority flora species to occur within the application area based on suitable habitat: *Micromyrtus chrysodema* (P1), *Baeckea* sp. *Sandstone* (P3), *Goodenia modesta* (P3), and *Sauropus* sp. *Woolgorong* (P3) (Botanica, 2021). While these species have the potential to occur, given the narrow and linear nature of the proposal, the proposed clearing is unlikely to significantly reduce habitat availability (Botanica, 2021). All vegetation types are common and widespread within the region, and found beyond the application area (Botanica, 2021).

Conclusion

Based on the above assessment, the proposed clearing is unlikely to be at variance to Principle (a).

Conditions

A weed management condition is recommended to help reduce the spread of weeds.

3.3. Relevant planning instruments and other matters

There is one native title claim (WC2018/005) over the area under application (DPLH, 2022). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

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

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 is located approximately 84.5 kilometres northwest of Leonora. The area proposed to be cleared is a linear corridor of native vegetation in the extensive land use zone of Western Australia. The proposed haul road will link the Orelia Mine to the Thunderbox Processing Plant (Northern Star, 2021).
Ecological linkage and conservation areas	There are no conservation areas in the vicinity of the application area. The nearest DBCA (formerly DPaW) managed land is the Wanjarri Nature Reserve which is located approximately 30.5 kilometres north of the application area (GIS Database). The proposed clearing does not represent a significant remnant of native vegetation in an area that has been extensively cleared, and is unlikely to provide an ecological linkage to surrounding areas.
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>18: Low woodland; mulga (<i>Acacia aneura</i>); 28: Open low woodland; mulga; and 109: Hummock grasslands, shrub steppe; <i>Eucalyptus youngiana</i> over hard spinifex (GIS Database).</p> <p>A flora and vegetation survey was conducted over the application area by Botanica Consulting (Botanica) during 24-25 March 2021. The following vegetation types were recorded within the application area (Botanica, 2021):</p> <p>CLP-AOW1 – Acacia open woodland <i>Acacia incurvaneura</i>, <i>Acacia craspedocarpa</i> and <i>Grevillea berryana</i> open woodland over <i>Eremophila forrestii</i>, <i>Eremophila margarethae</i> and <i>Scaevola spinescens</i> open shrubland over <i>Eragrostis eriopoda</i>, <i>Triodia melvillei</i> tussock grassland/ <i>Maireana tomentosa</i> low open shrubland.</p> <p>CLP-OMW/AFW1 – Eucalyptus open mallee woodland/ Acacia woodland <i>Eucalyptus lucasii</i> open mallee woodland/ <i>Acacia incurvaneura</i> and <i>Acacia caesaneura</i> woodland over <i>Acacia effusifolia</i>, <i>Acacia ramulosa</i> and <i>Psyrdrax suaveolens</i> shrubland over <i>Triodia melvillei</i>, <i>Monachather paradoxus</i> tussock grassland.</p> <p>DD-AOW1 – Acacia woodland <i>Acacia incurvaneura</i> and <i>Acacia aptaneura</i> woodland over <i>Eremophila margarethae</i>, <i>Acacia erinacea</i> and <i>Acacia tetragonophylla</i> sparse shrubland over <i>Aristida contorta</i>, <i>Eriachne pulchella</i> tussock grassland/ <i>Ptilotus obovatus</i> var. <i>obovatus</i> low sparse shrubland.</p> <p>RP-AOW1 – Acacia open woodland <i>Acacia incurvaneura</i> and <i>Acacia aptaneura</i> open woodland over <i>Eremophila margarethae</i>, <i>Acacia erinacea</i> and <i>Acacia tetragonophylla</i> sparse shrubland over <i>Aristida contorta</i>, <i>Eriachne pulchella</i> tussock grassland/ <i>Ptilotus obovatus</i> var. <i>obovatus</i> low sparse shrubland.</p> <p>RS-AFW1 – Acacia low open forest <i>Acacia incurvaneura</i>, <i>Acacia mulganeura</i> and <i>Acacia quadrimarginea</i> low open forest over <i>Eremophila georgei</i>, <i>Dodonaea microzyga</i> and <i>Dodonaea viscosa</i> open shrubland over <i>Ptilotus obovatus</i> var. <i>obovatus</i>, <i>Ptilotus schwartzii</i> and <i>Solanum lasiophyllum</i> low open shrubland.</p> <p>SP-EW1 – Eucalyptus open woodland <i>Eucalyptus gongylocarpa</i> open woodland and <i>Acacia caesaneura</i> and <i>Acacia ligulata</i> open woodland over <i>Alyogyne pinoniana</i>, <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> and <i>Seringa velutina</i> open shrubland over <i>Triodia melvillei</i>, <i>Eragrostis eriopoda</i> and <i>Monachather paradoxus</i> tussock grassland.</p>
Vegetation condition	<p>The vegetation survey (Botanica, 2021) indicates the vegetation within the proposed clearing area is in mostly good condition, with small areas that are completely degraded (Keighery, 1994), described as:</p> <ul style="list-style-type: none"> • 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. • 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.

Characteristic	Details
	The full Keighery (1994) condition rating scale is provided in Appendix C.
Climate and landform	The application area is mapped within elevations of 460-520 metres AHD. The climate of the region is arid with mainly winter rainfall, with an average rainfall of approximately 251.6 millimetres per year (BoM, 2022; CALM, 2002).
Land degradation risk and soil description	The application area lies within the Bullimore, Desdemona, Ranch, Ararak, Gransal, Yanganoo, and Bevon land systems (GIS Database).
Waterbodies	The desktop assessment and aerial imagery indicates that multiple ephemeral drainage lines intersect the application area.
Hydrogeography	The application area is not within any legislated surface water area. The application area is located within the East Murchison Ground Water Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> . The mapped groundwater salinity is 500-7000 milligrams per litre which is described as drinking to saline water quality.
Flora	There has been no previous records of Threatened or Priority flora within the application area. Botanica (2021) undertook a reconnaissance flora survey of the application area and did not record any Threatened or Priority flora species. A desktop assessment identified multiple conservation significant flora species recorded around the application area, including: <i>Korthalsella leucothrix</i> (P1), <i>Micromyrtus chrysodema</i> (P1) <i>Stenanthemum patens</i> (P1), <i>Baeckea</i> sp. Sandstone (P3), <i>Phyllanthus baeckeoides</i> (P3), <i>Grevillea inconspicua</i> (P4), and <i>Hemigenia exilis</i> (P4). The survey report identified that <i>Micromyrtus chrysodema</i> (P1), <i>Baeckea</i> sp. Sandstone (P3), <i>Goodenia modesta</i> (P3), and <i>Sauropus</i> sp. Woolgorong (P3) may possibly occur within the application area based on suitable habitat present (Botanica, 2021).
Ecological communities	There are no mapped Priority or Threatened Ecological Communities within the application area. There are numerous calcrete PECs within 20 kilometres of the application area. These PECs consist of assemblages of invertebrates identified in the groundwater calcretes and are associated with the palaeodrainage systems within the region.
Fauna	There are records of seven fauna species of conservation significance within the regional area, consisting of five Threatened and two migratory or otherwise protected species (Botanica, 2021). No conservation significant fauna species were identified during the basic fauna survey (Botanica, 2021).

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 does not contain locally or regionally significant flora, fauna, habitats, or assemblages of plants.</p>	Not likely to be at variance	Yes Refer to Section 3.2.1, above.
<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>A basic fauna survey identified seven fauna habitats located within the application area (Botanica, 2021). None of the fauna habitats identified within the application area were considered significant habitat for any fauna species (Botanica, 2021).</p> <p>No conservation significant fauna species were identified during the fauna assessment (Botanica, 2021). Malleefowl (<i>Leipoa ocellata</i>, VU) and Grey Falcon (<i>Falco hypoleucos</i>, VU) were identified as potentially utilising the area, however none of the vegetation would provide significant habitat for either of these species (Botanica, 2021).</p> <p>Given the narrow, linear nature of the proposal, the proposed clearing is unlikely to significantly reduce the extent or availability of any fauna habitats identified within the application area.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<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). A flora survey of the application area did not record any species of Threatened flora and the vegetation is not expected to support any species of Threatened flora (Botanica, 2021).</p> <p>The vegetation types recorded within the application area are common and widespread within the region (Botanica, 2021; GIS Database). The vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened flora.</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). Flora and vegetation surveys of the application area did not identify any vegetation that would part of a TEC (Botanica, 2021).</p>	Not likely to be at variance	No
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 application area falls within the Murchison Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99% of the pre-European vegetation still exists in the IBRA Murchison Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation association 18: Low woodland; mulga (<i>Acacia aneura</i>), 28: Open low woodland; mulga, and 109: Hummock grasslands, shrub steppe; <i>Eucalyptus youngiana</i> over hard spinifex (GIS Database). Approximately 98-99% of the pre-European extent of this vegetation association remains uncleared at both the state and bioregional 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 in the vicinity of the application area. The nearest DBCA (formerly DPaW) managed land is the Wanjarri Nature Reserve which is located approximately 30.5 kilometres north of the application area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.</p>	Not likely to be at variance	No
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 two major and seven minor ephemeral drainage lines which intersect the application area (Northern Star, 2021; GIS Database). One vegetation type was mapped as growing in association with these drainage lines: DD-AOW1 – <i>Acacia</i> woodland (Botanica, 2021). The proposed clearing is at variance to this Principle. Potential impacts to vegetation growing in association with watercourses may be minimised by the implementation of a watercourse management condition.</p>	At variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The application area lies within the Ararak, Bevon, Bullimore, Desdemona, Gransal, Ranch, and Yanganoo land systems (GIS Database). These land systems have been</p>	May be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>mapped and described in technical bulletins produced by the former Department of Agriculture (now the Department of Primary Industries and Regional Development).</p> <p>The Bevon, Gransal, and Ranch and systems are susceptible to erosion water of soil erosion, particularly is perennial vegetation cover is reduced (Payne et al., 1998). The remaining land systems are generally not susceptible to erosion (Payne et al., 1998).</p> <p>The proposed area of clearing is gently undulating (Northern Star, 2021). There are multiple drainage lines that intersect the application area that are relatively undefined as they cross where the proposed haul road will be (Northern Star, 2021). The design of the haul road will have these drainage lines level to the gravelled road surface (Northern Star, 2021). There is a potential for heavy rainfall events to flood the proposed road and may require grading/gravelling following these events (Northern Star, 2021).</p> <p>There is a risk for erosion to occur, particularly within drainage lines. Given the linear nature of the proposed clearing for a haul road, a staged clearing condition is not recommended despite potential erosion risk. Potential erosion may be adequately minimised through a watercourse management condition that will require existing surface flow to be maintained.</p>		
<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). Drainage lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. The proposed clearing is unlikely to result in significant changes to surface water flows or to cause deterioration in the quality of underground water.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The climate of the region is arid, with an average rainfall of approximately 251.6 millimetres per year (BoM, 2022; CALM, 2002). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall.</p> <p>There are no permanent water courses 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.

Condition	Description
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):

- Contours (DPIRD-073)
- 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)
- 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)

D.2. References

- BoM (2022) Bureau of Meteorology Website – Climate Data Online, Marble Bar. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 15 February 2022).
- Botanica (2021) Reconnaissance Flora and Basic Fauna Survey of the proposed Bronzewing to Thunderbox Haul Road (L36/246). Prepared for Northern Star Resources Ltd, by Botanica Consulting, October 2021.
- Department of Environment Regulation (DER) (2013) *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
- Department of Planning, Lands and Heritage (DPLH) (2022) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 17 February 2022).
- 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
- 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

- 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
- 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>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Northern Star (2021) Clearing Permit Supporting Information – Orelia South Proposed Haul Road. Northern Star Resources Limited, October 2021.
- Payne, A.L., van Vreeswyk, A.M., Leighton, K.A., Pringle, H.J., and Hennig, P. (1998) An inventory and condition survey of the Sandstone-Yalgoo-Paynes Find area, Western Australia. Department of Agriculture and Food, Western Australia, Perth. Technical Bulletin 90.

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.