



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	7914/3
Permit type:	Purpose Permit
Applicant name:	Australian Nickel Investments Pty Ltd
Application received:	16 March 2022
Application area:	180 hectares
Purpose of clearing:	Mineral Production and Associated Activities
Method of clearing:	Mechanical Removal
Tenure:	Mining Leases 36/127, 36/180, 36/349, 36/371, 36/659 Miscellaneous Licence 36/159
Location (LGA area/s):	Shire of Leonora
Colloquial name:	Cosmos Nickel Project

1.2. Description of clearing activities

Australian Nickel Investments Pty Ltd proposes to clear up to 180 hectares of native vegetation within a boundary of approximately 1,155.22 hectares, for the purpose of mineral production and associated activities. The project is located approximately 33 kilometres north-west of Leinster, within the Shire of Leonora.

The amendment is to allow for the installation of a power line corridor, which will run along the mine access road (Western Areas, 2022).

Clearing permit CPS 7914/1 was granted by the Department of Mines, Industry Regulation and Safety on 8 February 2018 and was valid from 3 March 2018 to 28 February 2023. The permit authorised the clearing of up to 77 hectares of native vegetation within a boundary of approximately 917 hectares, for the purpose of mineral production and associated activities.

CPS 7914/2 was granted on 2 August 2018, amending the permit to increase the amount of clearing authorised to 157 hectares and increase the permit boundary to approximately 1,136 hectares.

On 16 March 2022, the Permit Holder applied to amend CPS 7914/2 to increase the amount of clearing authorised to 180 hectares, increase the permit boundary to approximately 1,155.22 hectares, extend the permit duration by four years, and add tenure.

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	4 August 2022
Decision area:	180 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51KA(1) of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 16 March 2022. DMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix D), supporting information provided by the applicant (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 conditions currently imposed on clearing permit CPS 7914/2 are considered adequate to manage the impacts of clearing:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- watercourse management condition to reduce the impacts to riparian vegetation.

The assessment has not changed since the assessment for CPS 7914/2, except in the case of principle (g). The Delegated Officer determined that the proposed increase in amount of clearing authorised and increase to the permit boundary is not likely to lead to an unacceptable risk to environmental values.

2. Legislative context

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

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

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

Other legislation of relevance for this assessment includes:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Mining Act 1978* (WA)

Relevant agreements (treaties) considered during the assessment include:

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

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The permit holder has committed to a number of environmental management and mitigation measures listed below (Western Areas, 2022):

- avoid clearing large trees and fauna breeding habitat identified for conservation significant species;
- avoid disturbing any significant drainage line so as not to alter its flow;
- where possible, utilise previously disturbed areas to minimise impacts on natural bushland;
- rehabilitate all sites and tracks as per the Cosmos Mine Closure Plan;
- undertake weed control as per the Cosmos Weeds Spraying and Chemical Handling Procedure; and
- avoid clearing Priority flora and maintain a buffer area of 10 around plants/populations identified.

The clearing for a power line corridor will utilise previously disturbed areas, as it will be constructed along the main mine site access road (Western Areas, 2022). The majority of this power line corridor is bare of vegetation (GIS Database).

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

No new biological information has been provided in support of this amendment application. The environmental values of the application area are well understood, and are described in the previous version of the decision report, based on biological studies undertaken over various years. The previous assessment of the clearing did not identify any significant environmental impacts from the clearing of 157 hectares. The permit boundary contains a significant amount of area which has been impacted by previous mining activities. The additional area will be focussed on the existing area of disturbance (Western Areas, 2022). The proposed amendment to clear 180 hectares is not likely to have significant environmental impacts. Based on the current environmental information, the extension of the permit duration is unlikely to change the environmental impacts of the proposed clearing. The conditions currently imposed on clearing permit CPS 7914/2 are considered adequate to manage the impacts of the clearing.

A review of current environmental information (Section 3.2.1; Appendix B) reveals that the assessment against the clearing principles has not changed significantly from the previous version of this permit, with the exception of Principle (g), which is now may be at variance.

3.2.1. Biological values (PEC) - Clearing Principles (a)

Assessment

The amendment area intersects the Violet Range (Perseverance Greenstone Belt) vegetation complexes (banded ironstone formation) Priority 1 Ecological Community (PEC) (GIS Database). The extent of this PEC is approximately 14,647 hectares in total (GIS Database). The proposed power line corridor that intersects this PEC is approximately 10.2 hectares, which represents approximately 0.07% of the total PEC (GIS Database). Most of this area is bare of vegetation, due to the power line corridor running along the mine access road (Western Areas, 2022; GIS Database). The proposed increase in clearing is unlikely to significantly reduce the extent of this PEC.

The previous granted permit boundary also intersects this PEC, however the majority of the mine site infrastructure has not disturbed this PEC (GIS Database). The total extent of this PEC makes up approximately 126 hectares, or 0.7% of the amendment area. A reported total of 88.23 hectares of vegetation has been cleared under this permit, with a remaining 91.77 hectares (Western Areas, 2022). Any additional clearing that may occur within the Violet Range PEC is unlikely to cause significant impact.

Conclusion

Based on the above assessment, the proposed clearing is unlikely to result in a significant reduction to the extent of the Violet Range PEC.

Conditions

No management conditions required.

3.3. Relevant planning instruments and other matters

There is one native title claim (WC2011/007) over the area under application (DPLH, 2022). This claim has been determined by the Federal Court on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are two registered Aboriginal Sites of Significance within the application area (DPLH, 2022). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Other relevant authorisations that may be required for the proposed land use include:

- A Programme of Work approved under the *Mining Act 1978*.
- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

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

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The project is located approximately 33 kilometres north-west of Leinster, within the Shire of Leonora in the extensive land use zone. The application area is surrounded by vast tracts of uncleared land. The predominant land use in the region is extensive pastoralism and mining.
Conservation areas and ecological linkage	There are no conservation areas located within the amendment area. The nearest conservation area is the Wanjarri Nature Reserve, located approximately 10.6 kilometres northeast of the amendment area. The amendment area is not representative of an ecological linkage.
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>); and</p> <p>39: Shrublands; mulga scrub (GIS Database).</p> <p>Multiple flora and vegetation surveys have been conducted over the amendment area by Mattiske Consulting Pty Ltd (Mattiske, 2011), PEK (2017) and Botanica (2018). The following vegetation types were recorded within the amendment area (Botanica, 2018; Mattiske, 2011):</p> <p>A1: Low Woodland of <i>Acacia aneura</i> var. <i>aneura</i> and <i>Acacia craspedocarpa</i> with occasional <i>Acacia aneura</i> var. <i>macrocarpa</i>, <i>Acacia fusca</i>, and <i>Santalum spicatum</i> over <i>Eremophila fraseri</i> subsp. <i>galeata</i>, <i>Eremophila spectabilis</i>, <i>Monachather paradoxus</i> and <i>Eragrostis eriopoda</i>;</p> <p>A2: Low Open Woodland of <i>Acacia aneura</i> and <i>Acacia aneura</i> var. <i>macrocarpa</i> over <i>Eremophila fraseri</i> subsp. <i>galeata</i>, <i>Eremophila spectabilis</i>, <i>Eremophila latrobei</i> subsp. <i>latrobei</i>, <i>Senna artemisioides</i> subsp. <i>helmsii</i> x <i>oligophylla</i> and <i>Eragrostis eriopoda</i>;</p> <p>A6: Low Woodland of <i>Acacia aneura</i>, <i>Acacia aneura</i> var. <i>intermedia</i>, <i>Acacia fusca</i> and <i>Acacia grasbyi</i> with occasional patches of <i>Eucalyptus kingsmillii</i> subsp. <i>kingsmillii</i> over <i>Triodia basedowii</i> grass, <i>Hakea lorea</i> subsp. <i>lorea</i>, <i>Duboisia hopwoodii</i> and <i>Senna artemisioides</i> subsp. <i>petiolaris</i> and <i>Eremophila oldfieldii</i> subsp. <i>angustifolia</i> over <i>Indigofera brevidens</i> and <i>Senna</i> species.</p> <p>S5: Open shrubland of <i>Eremophila scoparia</i> with <i>Hakea preissii</i>, <i>Scaevola spinescens</i>, <i>Solanum lasiophyllum</i>, <i>Maireana triptera</i>, <i>Senna artemisioides</i> subsp. <i>helmsii</i> x <i>oligophylla</i> and occasional emergent <i>Acacia</i> species; and</p> <p>S7: Open shrubland of <i>Eremophila fraseri</i> subsp. <i>galeata</i> and <i>Acacia tetragonophylla</i> with occasional emergent <i>Acacia</i> species over <i>Senna artemisioides</i> subsp. <i>helmsii</i> x <i>oligophylla</i> and <i>Solanum lasiophyllum</i>.</p> <p>No recent surveys have been conducted over the proposed power line corridor. It can be inferred that similar vegetation occurs within the proposed amendment area as those listed above.</p>
Vegetation condition	<p>The vegetation surveys (Mattiske, 2011; PEK, 2017) and aerial imagery indicate that the vegetation within the amendment area is in very good to completely degraded condition, described as:</p> <ul style="list-style-type: none"> - 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. - 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. <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>
Climate and landform	The application area is mapped within elevations of 460-500 metres AHD. The annual average rainfall (Mount Magnet Aero) is 246.6 millimetres (BoM, 2022).
Soil description and land degradation risk	The amendment area is mapped within the Ararak, Bullimore, Duketon, Jundee, Laverton, and Violet land systems.

Characteristic	Details
	The majority of these land systems are not susceptible to erosion, however alteration to natural sheet flow and drainage lines can initiate soil erosion and lead to water starvation of native vegetation.
Waterbodies	The desktop assessment and aerial imagery indicated that several minor, non-perennial watercourses intersect the area proposed to be cleared.
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 1000-3000 milligrams per litre total dissolved solids which is described as brackish water quality.
Flora	There are records of 10 Priority flora species within a 20 kilometre radius of the permit area.
Ecological communities	The amendment area is located partially within the Violet Range (Perseverance Greenstone Belt) vegetation complexes (banded ironstone formation), a Priority 1 PEC.
Fauna	Previous surveys of the surrounding areas identified 11 fauna species of conservation significance that have the potential to occur, with malleefowl (<i>Leipoa ocellata</i>) being the most likely to occur (PEK, 2017).

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> The amendment area intersects the Violet Range (Perseverance Greenstone Belt) vegetation complexes (banded ironstone formation) Priority 1 Ecological Community (GIS Database).</p>	Not likely to be at variance as per CPS 7914/2	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> The amendment area may provide suitable habitat for several conservation significant water and migratory birds due to the number of drainage lines present (Western Areas, 2022; GIS Database). Given the highly mobile nature of these species and infrequent rain events, it is unlikely that any birds are reliant upon the habitats present within amendment area (Western Areas, 2022). However, Lake Miranda is located south of the amendment area is likely to provide suitable habitat for these birds (GIS Database).</p> <p>No conservation significant fauna other than migratory or specially protected bird species have been previously recorded within the amendment area (Western Areas, 2022). It is unlikely that the proposed clearing provides significant habitat for any conservation significant fauna species (Western Areas, 2022).</p>	Not likely to be at variance as per CPS 7914/2	No
<p><u>Principle (c):</u> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><u>Assessment:</u> There are no known records of Threatened flora within 20 kilometres of the amendment area (GIS Database). No flora surveys have been conducted over the additional amendment area, and the majority of the power line corridor has been cleared of vegetation (Western Areas, 2022). Of what vegetation is present, it is likely that vegetation types mapped in adjacent surveys are representative of the amendment area. None of these vegetation types are expected to support any Threatened flora species (PEK, 2017). 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 as per CPS 7914/2	No
<p><u>Principle (d):</u> "Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."</p> <p><u>Assessment:</u> There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the amendment area (GIS Database). Flora and</p>	Not likely to be at variance as per CPS 7914/2	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>vegetation surveys of parts of the amendment did not identify any vegetation that would part of a TEC (Mattiske, 2005; Mattiske, 2011; PEK, 2017).</p>		
<p>Environmental value: significant remnant vegetation and conservation areas</p>		
<p>Principle (e): <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>Assessment: 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).</p> <p>The application area is broadly mapped as Beard vegetation association 18: Low woodland; mulga (<i>Acacia aneura</i>) and 39: Shrublands; mulga scrub (GIS Database). Approximately 99% of the pre-European extent of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2019).</p> <p>The vegetation proposed to clear is not a remnant in an area that has been extensively cleared.</p>	<p>Not at variance as per CPS 7914/2</p>	<p>No</p>
<p>Principle (h): <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>Assessment: There are no conservation areas located within the amendment area. The nearest conservation area is the Wanjarri Nature Reserve, located approximately 10.6 kilometres northeast of the amendment area (GIS Database). The proposed clearing is unlikely to have an impact on the environmental values of any conservation area.</p>	<p>Not likely to be at variance as per CPS 7914/2</p>	<p>No</p>
<p>Environmental value: land and water resources</p>		
<p>Principle (f): <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>Assessment: There are several ephemeral drainage lines that intersect the amendment area (GIS Database). There are many similar drainage lines scattered throughout the local area, which likely only flow following a significant rain event. Mattiske (2011) identified vegetation growing in association with these drainage lines. It is likely this vegetation occurs within the drainage lines within the amended permit boundary.</p> <p>Potential impacts to vegetation growing in association with a watercourse may be managed by the continued implementation of a watercourse management condition.</p>	<p>At variance as per CPS 7914/2</p>	<p>No</p>
<p>Principle (g): <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p>Assessment: The amendment area is broadly mapped within the Ararak, Bullimore, Duketon, Jundee, Laverton, and Violet land systems (GIS Database).</p> <p>The majority of these land systems are not susceptible to erosion, however alteration to natural sheet flow and drainage lines can initiate soil erosion and lead to water starvation of native vegetation (Curry et al., 1994). However, given that the majority of the proposed power corridor (the increase to the permit boundary) has been cleared of vegetation (Western Areas, 2022), the additional proposed clearing (23 hectares) is unlikely to significantly increase erosion potential.</p>	<p>May be at variance changed from CPS 7914/2</p>	<p>No</p>
<p>Principle (i): <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>Assessment: There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). The proposed amendment is to clear for the installation and management of a power line corridor that runs along the mine access track (Western Areas, 2022). The majority of the power line corridor is bare of vegetation. There are several ephemeral drainage lines that intersect the proposed corridor and larger amendment area, however these flow following</p>	<p>Not likely to be at variance as per CPS 7914/2</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
significant rainfall (Western Areas, 2022). The proposed clearing is unlikely to impact surface or ground water quality.		
<p><u>Principle (i):</u> "Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."</p> <p><u>Assessment:</u> The climate of the region is arid, with an annual average rainfall (Mount Magnet Aero) of 246.6 millimetres (BoM, 2022; CALM, 2002).</p> <p>There are several ephemeral drainage lines that intersect the amendment area, and flow following large rainfall events (Western Areas, 2022; GIS Database). The topographic contours of the amendment area are at the highest in the east and goes down a gradient to the west and south (GIS Database). Any sheet flow following rainfall events is likely to flow to the west or south to Lake Miranda, located outside the amendment area (GIS Database). The proposed clearing is unlikely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be at variance as per CPS 7914/2	No

Appendix C. Vegetation condition rating scale

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

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

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

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
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)
- 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)

D.2. References

- BoM (2022) Bureau of Meteorology Website – Climate Data Online, Mount Magnet Aero. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 27 June 2022).
- Botanica (2018) Memorandum: Cosmos Water Management Pond Expansion Flora and Vegetation Desktop Assessment. Report prepared for Western Areas Limited, by Botanica Consulting Pty Ltd, May 2018.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management.
- Curry, P.J., Payne, A.L., Leighton, K.A., Hennig, P., and Blood, D.A. (1994), An inventory and condition survey of the Murchison River catchment, Western Australia. Department of Agriculture, Perth. Technical Bulletin 84.
- 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 27 June 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
- 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.
- Mattiske (2005) Flora and Vegetation Survey of the Cosmos Nickel Project, including the Prospero Expansion Area. Report prepared for URS Australia Pty Ltd, by Mattiske Consulting Pty Ltd, April 2005.
- Mattiske (2011) Flora and Vegetation Survey of Proposed Evaporation Pond Extensions: Cosmic Nickel Project. Prepared for Xstrata Nickel Australasia Operations Pty Ltd, by Mattiske Consulting, April 2011.
- PEK (2017) Cosmos Nickel Project – Level 1 vegetation, flora and fauna survey, Cosmos Nickel Mine Water Management Ponds and Coreyard Expansion. Report prepared for Australian Nickel Investments Pty Ltd, by PEK Enviro, January 2017.
- Western Areas (2022) CPS 7914/2 Amendment Application Supporting Document. Prepared by Western Areas Ltd, March 2022.

4. Glossary

Acronyms:

BC Act	<i>Biodiversity Conservation Act 2016, Western Australia</i>
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.