Government of Western Australia
Department of Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	9435/1
Permit type:	Purpose Permit
Applicant name:	Big Bell Gold Operations Pty Ltd
Application received:	20 September 2021
Application area:	250 hectares
Purpose of clearing:	Mineral Production and Associated Activities
Method of clearing:	Mechanical Removal
Tenure:	Mining Leases 20/55, 20/108, 20/111, 20/176, 20/183, 20/195, 20/247
Location (LGA area/s):	Shire of Cue
Colloquial name:	Tuckabianna Project

1.2. Description of clearing activities

Big Bell Gold Operations Pty Ltd proposes to clear up to 250 hectares of native vegetation within a boundary of approximately 1,988.614 hectares, for the purpose of mineral production and associated activities.

The application is to allow for the development of the Katie's mining area, expansion of the current tailings storage facility, and facilitate future mining operations.

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	3 February 2021
Decision area:	250 hectares (ha) of native vegetation

1.4. Reasons for decision

This clearing permit application was submitted 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 20 September 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 including the results of flora and vegetation surveys (Appendix D), the results of a fauna survey (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).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- potential impacts to conservation significant flora;
- potential land degradation in the form of water 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;
- commence construction no later than three 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 2013)
- 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 permit holder revised their permit boundary prior to the submission of their clearing permit application to exclude larger populations of conservation significant flora species (Westgold, 2021). The location of these flora species were informed by the results of two flora surveys conducted over the application area (Maia, 2020; Maia, 2021). The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on conservation significant flora.

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) identified the impacts of the proposed clearing are limited and able to be managed to be environmentally acceptable with standard avoid and minimise, weed, and staged clearing management conditions.

3.2.1. Biological values - Clearing Principles (a) and (b)

Principle A

The clearing permit application area is located within the Eastern Murchison subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Murchison Bioregion (GIS Database). The Eastern Murchison subregion is characterised by its internal drainage and extensive areas of elevated red desert sandplains and minimal dune development (CALM, 2002). Vegetation is dominated by Mulga woodlands often rich in ephemerals; hummock grasslands, saltbush shrublands and *Tecticornia* shrublands (CALM, 2002).

Two reconnaissance and targeted flora and vegetation surveys have been conducted over different parts of the application area by Maia (2020; 2021) during September 2019 and March 2021. The vegetation of the application area is dominated by *Acacia* woodland/shrubland, *Ptilotus* shrubland, and *Eremophila* shrubland (Maia, 2020; Maia, 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 (Maia, 2020; Maia, 2021; Westgold, 2022; GIS Database).

A total of 110 flora species from 54 genera and 27 families were recorded within part of the application area during the September 2019 survey (Maia, 2020). A total 97 flora species were recorded from 47 genera and 28 families were recorded within part of the application area during the March 2021 survey (Maia, 2021). A desktop assessment identified 32 flora species of conservation significance have previously been recorded within 50 kilometres of the application area (Maia, 2020; Maia, 2021). Eleven of these conservation significant flora species have previously been recorded during surveys by Maia (2020; 2021) in the surrounding 50 kilometres. Flora surveys of the application area recorded four conservation significant flora species: *Drummondita miniata* (P3), *Sida picklesiana* (P3), and *Calotis* sp. Perrinvale Station (P3) (Maia, 2020; Maia, 2021). These species were recorded as single individuals, with the exception of *Calotis* sp. Perrinvale Station which was recorded as four individuals at one location (Maia, 2020; Maia, 2021). Direct impacts through clearing are expected for *Drummondita miniata* and *Sida picklesiana* (Maia, 2021; Westgold, 2021), however the clearing of these individual plants is unlikely to impact their conservation status as there are known populations recorded regionally and locally (Westgold, 2021). Maia (2020; 2021) also recorded small populations of both *Drummondita miniata* and *Sida picklesiana* immediately outside the application area. No species of Threatened flora were identified during either flora survey (Maia, 2020; Maia, 2021).

A desktop assessment identified a total of 234 vertebrate fauna species which have previously been recorded or have the potential to occur within 80 kilometres of the application area (Western Ecological, 2021). This includes 17 mammals, 169 birds, 46 reptiles and two amphibians (Western Ecological, 2021). Of the 234 fauna species, 31 are of conservation significance, including three mammal, 25 bird and three reptile species (Western Ecological, 2021). One of the 31 conservation significant fauna species were considered possibly occurring within the application due to suitable habitat present: West Coast Mulga Slider (*Lerista eupoda*, P1) (Western Ecological, 2021).

A total of 37 vertebrate species, comprising of four mammals (one native and four introduced), 27 birds, five reptiles and unidentifiable tadpoles were recorded during the field assessment of the application area (Western Ecological, 2021). No conservation significant fauna species were identified during the fauna assessment (Western Ecological, 2021). The proposed clearing is unlikely to significantly impact the fauna biodiversity within a local or regional context.

The vegetation types, fauna habitats and landform types present within the application area, are well represented in surrounding areas (Maia, 2020; Maia, 2021; Western Ecological, 2021; Westgold, 2021; GIS Database). The application area is unlikely to represent an area of higher biodiversity than surrounding areas, in either a local or regional context.

Principle B

The following three broad fauna habitats have been recorded within the application area (Western Ecological, 2021):

- Mulga shrubland
- Drainage area
- Scattered *Acacia* on stony plains

The fauna habitats recorded within the application area are unlikely to provide significant habitat for fauna (Westgold, 2021). Fauna habitats found within the application area are common and widespread throughout the region (Western Ecological, 2021; Westgold, 2021). Much of the application area is degraded due to stock grazing and previous mining activities (Western Ecological, 2021; Westgold, 2021).

No conservation significant fauna species were recorded within the application area during the fauna assessment (Western Ecological, 2021; Westgold, 2021). There is a possibility of West Coast Mulga Slider (*Lerista eupoda*, P1) occurring within the application area based on suitable habitat present and one record 21 kilometres northwest of the application area (Western Ecological, 2021). However, the proposed clearing is unlikely to reduce the available fauna habitat for this species.

Conclusion
Based on the above, the proposed clearing is unlikely to be at variance to Principles A and B.

Conditions
No additional management conditions are required for these Principles.

3.3. Relevant planning instruments and other matters

There are no native title claims over the area under application (DPLH, 2022). 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 project is located approximately 67 kilometres northwest of Mount Magnet, within the Shire of Cue in the extensive land use zone The application area is surrounded by vast tracks if uncleared land. The predominant land use in the region is extensive pastoralism and mining.
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 former Lakeside Pastoral Lease which is located approximately 28.6 kilometres west-southwest 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 unlikely necessary to provide an ecological linkage.
Vegetation description	The vegetation of the application area is broadly mapped as the following Beard vegetation association: 18: Low woodland; mulga (*Acacia aneura*) (GIS Database). The following vegetation types were recorded within the application area during flora and vegetation surveys conducted by Maia Environmental Consultancy (Maia, 2020; Maia, 2021): **AaTSSL – Acacia aptaneura Tall Sparse Shrubland** Tall sparse shrubland of *Acacia aptaneura* with a sparse shrubland of *Thryptomene decussata* and a low sparse shrubland of *Ptilotus obovatus* and *Ptilotus schwartzii*. **ATOSL – Acacia Tall Open Shrubland to Low Open Woodland** Mixed tall open shrubland to low open woodland mainly of *Acacia aptaneura*, *Acacia pteraneura* and *Acacia pruinocarpa* with an open shrubland of *Acacia tetragonophylla* and *Acacia craspedocarpa* (hybrid) and a low sparse mixed shrubland mainly of *Eremophila forrestii* subsp. *forrestii*, *Eremophila simulans* subsp. *simulans* and *Eremophila punicea*. **ATSSL (1) – Acacia Tall Sparse Shrubland** Mixed tall sparse *Acacia* shrubland mainly of *Acacia aptaneura*, *Acacia ramulosa* var. *ramulosa* and *Acacia caesaneura* x *incurvaneura* with a mixed isolated shrubs mainly of *Ptilotus schwartzii*, *Eremophila simulans* subsp. *simulans* and *Eremophila lachnocalyx* with +/- low isolated trees of *Acacia pruinocarpa*. **ATSSL (2) – Acacia Tall Sparse Shrubland** Tall sparse shrubland of *Acacia aptaneura*, *Acacia ramulosa* var. *linophylla* and *Acacia incurvaneura* with a mixed sparse shrubland mainly of *Eremophila galeata*, *Eremophila latrobei* subsp. *latrobei* and *Eremophila simulans* subsp. *simulans* and a mixed low sparse shrubland mainly of *Ptilotus obovatus*, *Ptilotus schwartzii* and *Solanum lasiophyllum*. **ATSSL (3) – Acacia Tall Sparse Shrubland** Tall sparse shrubland of *Acacia craspedocarpa* (hybrid), *Acacia caesaneura* (narrow phyllode variant) and *Acacia tetragonophylla* with a sparse shrubland mainly of *Eremophila galeata* and *Eremophila clarkei* and a low sparse shrubland of *Ptilotus obovatus* and or *Eremophila lachnocalyx*. **MLSSL – Mixed Low Sparse Shrubland** Mixed low sparse shrubland mainly of *Eremophila latrobei* subsp. *latrobei, Drummondita miniata* (P3) and *He*migenia sp. Yalgoo (A.M. Ashby 2624) with isolated tall shrubs of *Acacia aulacophylla* and / or *Acacia pteraneura* and isolated tussock grasses of *Eriachne mucronata*.
Vegetation condition	The vegetation surveys (Maia, 2020; Maia, 2021) indicate the vegetation within the proposed clearing area is in excellent to completely degraded (Keighery, 1994) condition, described as: • 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

Characteristic	Details
	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. The full Keighery (1994) condition rating scale is provided in Appendix C.
Climate and landform	The application area is mapped within elevations of 450-500 metres AHD. The climate of the region is arid with mainly winter rainfall, with an average rainfall of approximately 232.6 millimetres per year (BoM, 2021; CALM, 2002).
Land degradation risk and soil description	The application area lies within the Violet, Wiluna, Sherwood, and Yanganoo land systems (GIS Databased). The majority of the application area has been mapped as the Violet land system (GIS Database). The Violet land system is described as undulating stony and gravelly plains and low rises, supporting mulga shrublands (Pringle et al., 1994). Generally this land system is resistant to erosion, however it is moderately susceptible to water erosion if the soil surface has been disturbed (Pringle et al., 1994)
Waterbodies	Multiple ephemeral drainage lines intersect the application area.
Hydrogeography	The application area is not within any legislated surface. The application area is located within the East Murchison Ground Water Area proclaimed under the *Rights in Water and Irrigation Act 1914*. The mapped groundwater salinity is 500-1000 milligrams per litre which is described as drinking to irrigation water quality.
Flora	Two flora surveys have been conducted over the application area (Maia, 2020; Maia, 2021). Maia (2020) recorded one Priority flora species: *Calotis* sp. Perrinvale Station (P3). Maia (2021) recorded two Priority flora species within the application area: *Drummondita miniata* (P3) and *Sida picklesiana* (P3). An additional two Priority flora species were recorded, however these species were found outside the application area: *Acacia speckii* (P4) and *Dodonaea amplisemina* (P4) (Maia, 2021).
Ecological communities	There are no known Threatened or Priority Ecological Communities (TECs/PECs) located within the application area (GIS Database). The Lake Austin vegetation complexes (banded ironstone formation) PEC (P1) is located approximately 480 metres south of the application area (GIS Database). Flora and vegetation surveys of the application area did not identify vegetation associated with this PEC or any TECs (Maia, 2020; Maia, 2021; Westgold, 2021).
Fauna	A desktop assessment identified 14 conservation significant fauna within and 80 kilometre radius of the application area (Western Ecological, 2021). No conservation significant fauna were identified during the field assessment (Western Ecological, 2021). One conservation significant fauna species was considered possibly occurring within the application area: West Coast Mulga Slider (*Lerista eupoda*) (P1) (Western Ecological, 2021).

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared does not contain locally or regionally significant fauna, habitats, or assemblages of plants. Impacts to two conservation significant flora species is expected from the proposed clearing, however one individual of two different species will be impacted. It is unlikely that the clearing of these two individuals will adversely impact their conservation status.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: A fauna survey of the application area did not identify any conservation significant fauna species (Western Ecological, 2021). The area proposed to be cleared does not contain significant habitat for fauna.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: 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 and the vegetation is not expected to support any species of Threatened flora (Maia, 2020; Maia, 2021). The vegetation types recorded within the application area are common and widespread within the region (Maia, 2020; Maia, 2021; GIS Database). The vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened flora.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database). Flora and vegetation surveys of the application area did not identify any vegetation that would part of a TEC (Maia, 2020; Maia, 2021).	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The 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 (*Acacia aneura*) (GIS Database). Approximately 99% of the pre-European extent of this vegetation association remains uncleared at both the state and bioregional level (Government of Western Australia, 2019).	Not at variance	No
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: There are no conservation areas in the vicinity of the application area. The nearest DBCA (formerly DPaW) managed land is the former Lakeside Pastoral Lease which is located approximately 28.6 kilometres west-southwest of the application area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.	Not likely to be at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: There are no permanent watercourses or wetlands within the area proposed to clear (Maia, 2020; Maia, 2021; Westgold, 2021; GIS Database). Multiple ephemeral drainage lines pass through the application area, only flowing after heavy rainfall (Westgold, 2021; GIS Database). The vegetation assessment did not identify vegetation within these drainage lines as riparian (Maia, 2020; Maia, 2021).	May be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The application area lies within the Violet, Wiluna, Sherwood, and Yanganoo land systems (GIS Databased). The majority of the application area has been mapped as the Violet land system (GIS Database). The Violet land system is described as undulating stony and gravelly plains and low rises, supporting mulga shrublands (Pringle et al., 1994). Generally this land system is resistant to erosion, however it is moderately susceptible to water erosion if the soil surface has been disturbed (Pringle et al., 1994). Given there are multiple ephemeral drainage lines intersecting the application area, the proposed clearing may cause appreciable land degradation. A staged clearing condition is recommended to help mitigate potential water erosion.	May be at variance	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: 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 (Westgold, 2022). The proposed clearing is unlikely to cause deterioration in the quality of underground water.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The climate of the region is arid, with an average rainfall of approximately 232.6 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 (Westgold, 2022). 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.	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):

- 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
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- RIWI Act, Groundwater Areas (DWER-034)
- 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, Cue. Bureau of Meteorology. http://www.bom.gov.au/climate/data/ (Accessed 11 January 2022).

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

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 11 January 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

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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.

Maia (2020) Holcim Turner River Quarry application for clearing permit within Mining Lease M45/666. Holcim Australia Pty Ltd, May 2021.

Maia (2021) Holcim Turner River Quarry application for clearing permit within Mining Lease M45/666. Holcim Australia Pty Ltd, May 2021.

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 Agriculture and Food, Western Australia, Perth. Technical Bulletin 87.

Western Ecological (2021) Tuckabianna Gold Project. Basic Terrestrial Fauna Survey Report. Prepared for Westgold Resources Limited, April 2021.

Westgold (2022) Cue Gold Operations Tuckabianna Project. Native Vegetation Clearing Permit Application Supporting Document. Westgold Resources Limited, September 2021.

4. Glossary

Acronyms:

BC Act	*Biodiversity Conservation Act 2016,* Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
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	*Environmental Protection Act 1986*, Western Australia
EPA	Environmental Protection Authority, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (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	*Rights in Water and Irrigation Act 1914*, 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.