



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8294/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Tellus Holdings Ltd

1.3. Property details

Property: Miscellaneous Licence 15/361
Miscellaneous Licence 15/362
Miscellaneous Licence 16/119
Local Government Area: Shire of Coolgardie
Colloquial name: Sandy Ridge Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
53.22		Mechanical Removal	Borrow Pits

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 7 February 2019

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The vegetation of the application area is broadly mapped as the following Beard vegetation associations:
128: Bare areas; rock outcrops;
141: Medium woodland; york gum, salmon gum and gimlet;
435: Shrublands; *Acacia neurophylla*, *Acacia beauverdiana* and *Acacia resinomarginea* thicket;
437: Shrublands; mixed *Acacia* thicket on sandplain;
1148: Shrublands; scrub-heath in the Coolgardie Region; and
1413: Shrublands; *Acacia*, *Casuarina* and *Melaleuca* thicket (GIS Database).
The majority of the application area is mapped as Beard vegetation associations 435 and 437.

A flora and vegetation survey was conducted over the proposed borrow pit sites and surrounding areas by PGV Environmental during November, 2017. PGV Environmental (2018) mapped 21 vegetation types within the survey area, with many of the vegetation types being minor variations in structure and species dominance of the following four main vegetation associations.

***Acacia/Allocasuarina* low open heath to tall shrubland** - This was the main vegetation association recorded across the survey area. Common understorey species included *Melaleuca uncinata*, *Grevillea hookeriana* subsp. *apiculoba*, *Seringia* (previously *Keraudrenia*) *velutina*, *Phebalium filifolium*, *Phebalium lepidotum*, *Melaleuca cordata*, *Malleostemon peltiger*, *Grevillea paradoxa* and *Persoonia coriacea*. In longer unburnt areas *Callitris preissii* was a common tall shrub. *Grevillea eriostachya* was a common tall shrub in the northern borrow pit sites.

Vegetation types:

- 1: *Homalocalyx thryptomenoides* low open heath;
- 2: *Acacia yorkkrakinensis*, *Acacia hemiteles* open heath;
- 4: *Allocasuarina corniculata*, *Allocasuarina acutivalvis* tall open shrubland;
- 5: *Allocasuarina corniculata*, *Allocasuarina acutivalvis* tall shrubland;
- 6: *Acacia yorkkrakinensis*, *Allocasuarina corniculata*, *Allocasuarina acutivalvis* open heath;
- 7: *Acacia yorkkrakinensis*, *Acacia resinimarginea*, *Allocasuarina corniculata* low open heath;
- 9: *Acacia resinimarginea* tall open scrub;
- 10: *Acacia resinimarginea*, *Allocasuarina corniculata* shrubland; and
- 12: *Callitris preissii*, *Acacia resinimarginea* tall shrubland.

***Acacia/Allocasuarina* low open heath over *Triodia scariosa* grassland** - This vegetation association was common in the borrow pit sites and was very similar in species composition to the *Acacia/Allocasuarina* low open heath to tall shrubland vegetation association except that *Triodia scariosa* was present, sometimes up to 40% cover.

Vegetation types:

- 3: *Acacia resinimarginea*, *Persoonia coriacea* open heath over *Triodia scariosa* open grassland;

8: *Acacia yorkkrakinensis*, *Allocasuarina acutivalvis* low open heath over *Triodia scariosa* open grassland; and
11: *Callitris preissii*, *Acacia resinimarginea* tall shrubland over *Triodia scariosa* open grassland.

Eucalyptus species shrub mallee - *Eucalyptus* shrub mallee species over an understorey similar to the *Acacia/Allocasuarina* vegetation association. Shrub mallee species recorded include *Eucalyptus oleosa*, *Eucalyptus pileata*, *Eucalyptus rigidula*, *Eucalyptus leptopoda*, *Eucalyptus yilgarnensis* subsp. *acuta* and *Eucalyptus platycorys*. The density of shrub mallees ranged from low to moderate. Height ranged from 2 metres to 4 metres. *Triodia scariosa* was present in areas with a sandier substrate.

Vegetation types:

13: *Eucalyptus yilgarnensis* very open shrub mallee over *Acacia yorkkrakinensis*, *Allocasuarina corniculata* open heath;

14: *Eucalyptus rigidula* very open shrub mallee over *Acacia burkittii* shrubland over *Triodia scariosa* open grassland;

15: *Eucalyptus oleosa* open shrub mallee over *Allocasuarina corniculata* open shrubland over *Triodia scariosa* open grassland;

16: *Eucalyptus oleosa* open shrub mallee over *Acacia yilgarnensis* low open heath over *Triodia scariosa* open grassland;

17: *Eucalyptus yilgarnensis* open tree mallee over *Acacia resinimarginea* open heath;

18: *Eucalyptus sheathiana* low woodland over *Eremophila* open shrubland;

19: *Eucalyptus pileata* low woodland over *Melaleuca uncinata* shrubland; and

21: *Eucalyptus transcontinentalis* open tree mallee over low open heath.

Eucalyptus woodland – The *Eucalyptus* woodland vegetation association was only recorded in one borrow pit, but covered almost half of the site. The vegetation structure and composition was very different to the other vegetation associations described above. Tree species included *Eucalyptus salmonophloia* (Salmon Gum), *Eucalyptus salubris* (Gimlet), *Eucalyptus eremophila* subsp. *eremophila* and *Eucalyptus loxophleba* subsp. *lissophloia*. The understorey was very open with common species including *Olearia muelleri*, *Exocarpos aphyllus*, *Dodonaea stenozyga*, *Acacia camptoclada* and *Phebalium filifolium*. The soils were sandy loams with pebbly ironstone. *Triodia* species were not present in these woodland areas.

Vegetation types:

20: *Eucalyptus eremophila*, *Eucalyptus salubris*, *Eucalyptus salmonophloia* woodland.

Clearing Description	Sandy Ridge Project. Tellus Holdings Ltd proposes to clear up to 53.22 hectares of native vegetation, for the purpose of borrow pits. The project is located approximately 75 kilometres east of Koolyanobbing, within the Shire of Coolgardie.
Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).
Comment	The vegetation condition was derived from a vegetation survey conducted by PGV Environmental (2018). The proposed clearing is for 14 borrow pits that will provide road building materials to upgrade and maintain an existing access road to the proposed Sandy Ridge mine site. The borrow pits range in size from 1.55 to 7.76 hectares. The proposed borrow pits are located along a stretch of approximately 85 kilometres of the existing road, which runs to the north from Great Eastern Highway.

3. Assessment of application against Clearing Principles

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

Comments **Proposal is not likely to be at variance to this Principle**

The clearing permit application area is located within the Southern Cross subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Coolgardie Bioregion (GIS Database).

The Southern Cross subregion is characterised by gently undulating uplands, broad valleys, low greenstone hills, granite outcrops and salt lakes (CALM, 2002). The vegetation of the subregion includes diverse *Eucalyptus* woodlands rich in endemic eucalypts, mallees and scrub-heaths (CALM, 2002). The salt lake surfaces support dwarf shrublands of samphire (CALM, 2002). The scrubs are rich in endemic *Acacia* species and Myrtaceae (CALM, 2002).

The application area falls within the area known as the Great Western Woodlands, which represents the largest and most intact eucalypt woodland remaining in southern Australia and is one of the best examples of its type in the world (DEC, 2010). The Great Western Woodlands covers a total area of approximately 16 million hectares, and is recognised for its flora and fauna species richness and high number of endemic flora species (DEC, 2010). However, at approximately 53.22 hectares in size, the clearing permit application area represents less than 0.001% of the area covered by the Great Western Woodlands, and the proposed clearing is unlikely to have any significant impact on the conservation values of the Great Western Woodlands.

A flora and vegetation survey of the application area and surrounding areas was conducted by PGV Environmental (2018) between 10 November and 12 November 2017. A total of 21 vegetation types, as part of four broader vegetation associations, were identified in the survey area (PGV Environmental, 2018). None of the vegetation communities recorded by PGV Environmental (2018) were representative of any Priority or

Threatened Ecological Communities. PGV Environmental (2018) recorded the vegetation within the survey area as being in Excellent condition and noted that no weed species were recorded during the survey.

A total of 107 flora species from 60 genera and 25 families were recorded by PGV Environmental (2018) during the field survey of the proposed borrow pit sites. A desktop survey identified 83 species of conservation significant flora with the potential to occur within the application area, based on known distributions and habitat preferences. Thirty-nine of these species were considered to be possibly present in the survey area due to the occurrence of suitable habitat. However, none were recorded during the flora and vegetation survey (PGV Environmental, 2018). In addition, one undescribed species, *Lepidosperma* aff. *lyonsii*, was recorded by PGV Environmental (2018) and, although the populations recorded were in the wider survey area and not within the application area, there is the possibility that individuals may be present in the application area. However, as the species is well represented outside of the permit area, it is unlikely that the removal of a few individuals will have significant impacts on the species at a local and regional scale.

A vertebrate fauna reconnaissance survey was conducted by Terrestrial Ecosystems (2017) on 28 November 2017, and a desktop survey for invertebrate Short Range Endemics (SRE) was conducted by Bennelongia (2018). Five fauna habitats associated with the 21 vegetation types defined by PGV Environmental (2018) were identified by Terrestrial Ecosystems (2017): *Eucalyptus* woodland, heath, mallee woodland, shrubland, *Callitris* woodland. Similar fauna habitats in very good to excellent condition were identified in adjacent areas (Terrestrial Ecosystems, 2017). Bennelongia (2018) identified the *Eucalyptus* woodland habitat (only recorded in one borrow pit) as being of 'low' suitability for SRE, offering a variety of microhabitats and moderate shade and organic matter, however all other fauna habitats were identified as not exhibiting the characteristics of typical SRE refugia. Due to the small size of the borrow pit areas, they do not provide an important ecological linkage and are not considered fauna movement corridors (Terrestrial Ecosystems, 2017).

A desktop vertebrate fauna assessment by Terrestrial Ecosystems (2017) identified a total of 114 birds, 35 mammals, 88 reptiles and six amphibians with the potential to occur in the application area, including ten conservation significant fauna species. However, Terrestrial Ecosystems (2017) did not record any conservation significant fauna during the reconnaissance survey.

The vegetation and fauna habitat types recorded within the application area were representative of the region and were well represented in adjacent areas (PGV Environmental, 2018; Terrestrial Ecosystems, 2017). None of the proposed borrow pit areas contained salt lakes or rocky outcrops that would provide habitat for specialised flora and fauna. As the application area is comprised of 14 small areas (ranging from 1.55 to 7.76 hectares) immediately adjacent to a road and surrounded by intact native vegetation in excellent condition, it is unlikely that the proposed clearing of the application area will have a significant impact on the diversity of vegetation, flora and fauna at a local and regional scale.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Bennelongia (2018)
CALM (2002)
DEC (2010)
PGV Environmental (2018)
Terrestrial Ecosystems (2017)

GIS Database:
- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Flora
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers
- Threatened Fauna

(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 indigenous to Western Australia.

Comments Proposal is not likely to be at variance to this Principle

A vertebrate fauna habitat and targeted Malleefowl survey of the proposed borrow pit sites was conducted by Terrestrial Ecosystems (2017) on 28 November 2017. The following five fauna habitats were recorded within the application area (Terrestrial Ecosystems, 2017): *Eucalyptus* woodland; heath; mallee woodland; shrubland; and *Callitris* woodland.

Similar fauna habitats in very good to excellent condition were identified in areas adjacent to the application area (Terrestrial Ecosystems, 2017). The borrow pit areas do not provide an important ecological linkage and are not considered fauna movement corridors (Terrestrial Ecosystems, 2017).

A desktop survey for invertebrate SRE was conducted by Bennelongia (2018). Bennelongia (2018) identified the *Eucalyptus* woodland habitat (only recorded in one borrow pit) as being of 'low' suitability for invertebrate SRE, offering a variety of microhabitats and moderate shade and organic matter, representing habitat used by

several potential and confirmed SREs. However, this habitat type is widespread in surrounding areas and the small area (2.75 hectares) of proposed clearing for the borrow pit is unlikely to impact the conservation status of any SRE species (Bennelongia, 2018). The other habitats present within the application area were identified as not exhibiting the characteristics of typical SRE refugia and were ranked as not prospective for SREs (Bennelongia, 2018). Overall, the application area is unlikely to represent significant habitat for SRE fauna.

A desktop vertebrate fauna assessment by Terrestrial Ecosystems (2017) identified a total of 114 birds, 35 mammals, 88 reptiles and six amphibians with the potential to occur in the application area, including ten conservation significant fauna species (one of which, Rainbow Bee-eater (*Merops ornatus*), is no longer listed). However, no fauna species of conservation significance were observed during the targeted Malleefowl search (Terrestrial Ecosystems, 2017). No conservation significant vertebrate fauna were assessed as likely to be significantly impacted by the proposed vegetation clearing. The following conservation significant bird species possibly occur in the application area due to suitable habitat; Western Rosella, *Platycercus icterotis xanthogenys* (P4); Peregrine Falcon, *Falco peregrinus* (OS); and Malleefowl, *Leipoa ocellata* (T); and the migratory Fork-tailed Swift, *Apus pacificus* (IA). However, these species are highly mobile and unlikely to be specifically dependant on the habitat within the application area, and no Malleefowl mounds or tracks were identified during the targeted field assessment. One reptile species; the Woma, *Aspidites ramsayi* (P1), had the potential to occur in the vicinity of the borrow pit areas due to the presence of suitable habitat, however with an abundance of similar habitat in adjacent areas would only be present in low numbers. Terrestrial Ecosystems (2017) concluded that there was limited potential for impacting conservation significant fauna during the proposed vegetation clearing.

The fauna habitat types recorded within the application area were representative of the region and were well represented in adjacent areas (Terrestrial Ecosystems, 2017). No significant fauna habitat types or restricted habitat features such as rocky outcrops, caves, or watercourses were recorded within the application area. As the application area is comprised of 14 small areas (ranging from 1.55 to 7.76 hectares) immediately adjacent to a road and surrounded by intact native vegetation in excellent condition, it is unlikely that the vegetation within the application area represents significant habitat for fauna indigenous to Western Australia.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Bennelongia (2018)
Terrestrial Ecosystems (2017)

GIS Database:
- Imagery
- Pre-European Vegetation
- Threatened Fauna

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments **Proposal is not likely to be at variance to this Principle**

There are no known records of Threatened flora within the application area (GIS Database). A desktop flora survey by PGV Environmental (2018) identified 13 Threatened flora species as having the potential to occur within the application area. Only one of these, *Acacia sciophanes* (T), was identified as possibly occurring based on habitat preferences, with all others identified as unlikely to occur. The flora surveys of the application area and surrounding areas did not record any species of Threatened flora (PGV Environmental, 2018).

The vegetation associations within the application area are common and widespread within the region (CALM, 2002; PGV Environmental, 2018; GIS Database), and the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened (rare) flora.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology PGV Environmental (2018)

GIS Database:
- Pre-European Vegetation
- Threatened and Priority 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.

Comments **Proposal is not likely to be at variance to this Principle**

There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database).

A flora and vegetation survey of the application area did not identify any TECs (PGV Environmental, 2018).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology PGV Environmental (2018)

GIS Database:

- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

(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.

Comments **Proposal is not at variance to this Principle**

The application area falls within the Coolgardie Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 97% of the pre-European vegetation still exists in the IBRA Coolgardie Bioregion (Government of Western Australia, 2018). The application areas are broadly mapped as the following Beard vegetation associations:

- 128: Bare areas; rock outcrops;
- 141: Medium woodland; York gum, salmon gum and gimlet;
- 435: Shrublands; *Acacia neurophylla*, *Acacia beauverdiana* and *Acacia resinomarginea* thicket;
- 437: Shrublands; Mixed *Acacia* thicket on sandplain;
- 1148: Shrublands; scrub-heath in the Coolgardie Region; and
- 1413: Shrublands; *Acacia*, *Casuarina* and *Melaleuca* thicket (GIS Database).

Over 75% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2018). Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA managed lands
IBRA Bioregion – Coolgardie	12,912,204	12,648,491	~97	Least Concern	16
Beard vegetation associations – WA					
128	329,836	288,813	~87	Least Concern	21
141	1,158,760	960,755	~82	Least Concern	35
435	994,575	762,428	~76	Least Concern	21
437	505,364	475,077	~94	Least Concern	15
1148	260,383	258,227	~99	Least Concern	17
1413	1,679,916	1,286,855	~76	Least Concern	13
Beard vegetation associations – Coolgardie Bioregion					
128	184,549	183,891	~99	Least Concern	18
141	883,085	858,525	~97	Least Concern	46
435	738,211	732,467	~99	Least Concern	28
437	312,853	312,828	~99	Least Concern	19
1148	254,931	252,775	~99	Least Concern	17
1413	1,061,212	1,042,553	~98	Least Concern	18

* Government of Western Australia (2018)

** Department of Natural Resources and Environment (2002)

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2018)

GIS Database:
- IBRA Australia
- Pre-European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments Proposal is not at variance to this Principle

There are no watercourses or wetlands within the areas proposed to clear (PGV Environmental, 2018; GIS Database).

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology PGV Environmental (2018)

GIS Database:
- Hydrography, Lakes
- Hydrography, linear

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments Proposal is not likely to be at variance to this Principle

The application area lies within the Bimbijy Sandplain Zone and Southern Cross Zone of the Joseph land system (DPIRD, 2019).

The Bimbijy Sandplain and Southern Cross Zones are described as undulating yellow sandplains supporting a dense mixed shrubland of *Acacia*, mallee and heath with minor areas of granite outcrop. The system is subject to occasional highly intense and extensive fire. The risk of appreciable land degradation occurring as a result of the proposed clearing for borrow pits is low, with wind erosion being the most likely form of land degradation to occur (DPIRD, 2019). To minimise the risk of wind erosion it is recommended that the mined out areas be progressively revegetated as the areas are cleared (DPIRD, 2019).

The proposed clearing of up to 53.22 hectares of native vegetation, for the purpose of borrow pits is unlikely to cause appreciable land degradation.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology DPIRD (2019)

(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.

Comments Proposal is not likely to be at variance to this Principle

The nearest DBCA (formerly DPaW) managed land is the Goldfields Woodlands National Park which is located either side of the two most southerly borrow pits (GIS Database). Additionally, the Boorabbin National Park, is located approximately 500 metres to the west of the two most southerly borrow pits (GIS Database). Further north along the application area, the former Jaurdi pastoral station, now managed by DBCA, is located adjacent to three borrow pits (GIS Database). The small areas of proposed clearing immediately adjacent to an existing road are unlikely to impact on the environmental values of any conservation area.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Database:
- DPaW Tenure
- Environmentally Sensitive Areas
- Register of National Estate

(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.

Comments Proposal is not likely to be at variance to this Principle

There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). There are no watercourses or wetlands within the areas proposed to clear (GIS Database). Creek 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.

The proposed clearing is unlikely to cause deterioration in the quality of underground water.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Database:
- Hydrography, Linear
- Public Drinking Water Source Areas

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments **Proposal is not likely to be at variance to this Principle**

The climate of the region is semi-arid warm Mediterranean, with a low average rainfall of approximately 250-300 millimetres per year, of mainly winter rainfall (CALM, 2002). The nearest weather station is Southern Cross Airfield, approximately 100 kilometres south-west of the application area, with an average rainfall of approximately 306 millimetres per year (BoM, 2019).

There are no water courses or waterbodies within the application area (GIS Database). 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.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology BoM (2019)
CALM (2002)

GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, linear

Planning Instrument, Native Title, previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 8 January 2019 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. No submissions were received in relation to this application.

There are no registered native title claims over the area under application (DPLH, 2019). 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, 2019). 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.

This application is related to the Sandy Ridge Facility Project which was formally assessed by the EPA. Ministerial Statement 1078 was published on 27 June 2018 approving the project. This application area is not within the proposal footprint of the Sandy Ridge Facility Project.

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.

Methodology DPLH (2019)

4. References

- Bennelongia (2018) Sandy Ridge borrow pit areas: short-range endemic invertebrates. Report prepared for Tellus Holdings Ltd, by Bennelongia Environmental Consultants, February 2018.
- BoM (2019) Bureau of Meteorology Website – Climate Data Online, Southern Cross Airfield. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 16 January 2019).
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- DEC (2010) A Biodiversity and Cultural Conservation Strategy for the Great Western Woodlands Strategy. Department of Environment and Conservation, Western Australia.
- DPIRD (2019) Advice received in relation to Clearing Permit Application CPS 8294/1. Deputy Commissioner of Soil and Land Conservation, Department of Primary Industries and Regional Development, Western Australia, January 2019.

- DPLH (2019) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. <http://maps.daa.wa.gov.au/AHIS/> (Accessed 16 January 2019).
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Government of Western Australia (2018) 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. 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.
- PGV Environmental (2018) Sandy Ridge Project: IWDF access road borrow pit sites flora and vegetation survey. Report prepared for Tellus Holdings Ltd, by PGV Environmental, February 2018.
- Terrestrial Ecosystems (2017) Vertebrate Fauna Assessment of 14 borrow pits on Mount Walton IWDF Access Road. Report prepared for Tellus Holdings Ltd, by Terrestrial Ecosystems, December 2017.

5. Glossary

Acronyms:

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)
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DBCA and DWER)
DEE	Department of the Environment and Energy, Australian Government
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)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
DWER	Department of Water and Environmental Regulation, Western Australia
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , 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
SRE	Short Range Endemic
TEC	Threatened Ecological Community

Definitions:

{DPaW (2017) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

T	<p>Threatened species: Published as Specially Protected under the <i>Wildlife Conservation Act 1950</i>, listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).</p> <p>Threatened fauna is that subset of ‘Specially Protected Fauna’ declared to be ‘likely to become extinct’ pursuant to section 14(4) of the <i>Wildlife Conservation Act 1950</i>.</p> <p>Threatened flora is flora that has been declared to be ‘likely to become extinct or is rare, or otherwise in need of special protection’, pursuant to section 23F(2) of the <i>Wildlife Conservation Act 1950</i>.</p> <p>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.</p>
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- CR Critically endangered species**
Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EN Endangered species**
Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- VU Vulnerable species**
Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EX Presumed extinct species**
Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.
- IA Migratory birds protected under an international agreement**
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 the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- CD Conservation dependent fauna**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- OS Other specially protected fauna**
Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P Priority species**
Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and 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.