



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 8883/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Cockburn Cement Limited

1.3. Property details

Property: Mining Lease 70/311
Mining Lease 70/917
Local Government Area: Shire of Irwin
Colloquial name: Dongara Lime Sands

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
145.4		Mechanical Removal	Sand mining and associated infrastructure

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 17 December 2020

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 association/s:
17: Shrublands; *Acacia rostellifera* thicket;
432: Shrublands; *Acacia rostellifera* and *Melaleuca cardiophylla* thicket; and
772: Shrublands; *Acacia lasiocarpa* and *Melaleuca acerosa* heath (GIS Database).
More than half the application area is mapped as Beard vegetation association 772 (GIS Database).

PGV Environmental conducted a flora and vegetation survey over several tenements held by Cockburn Cement Ltd, on 8 – 10 September 2019 (PGV, 2019). The survey focused on potential sand mining areas within the tenements and covered parts of M70/311 and M70/917, including parts of the application area. Three separate areas were surveyed within the current clearing permit application area, covering in total approximately 81 hectares of the 252 hectare application area. The following vegetation associations were recorded within the current clearing permit application area (PGV, 2019):

MI: *Melaleuca lanceolata* Low Open Forest over weeds;

McMhAr: *Melaleuca cardiophylla* / *M. huegelii* / *M. lanceolata* / *Acacia rostellifera* Tall Open Scrub over *Rhagodia baccata* / *Threlkeldia diffusa* Low Shrubland;

ArMh: *Acacia rostellifera* / *Melaleuca huegelii* / *Myoporum insulare* Tall Open Scrub;

AI: *Allocasuarina lehmanniana* Open Heath over *Acacia lasiocarpa* / *Leucopogon parviflorus* / *L. insularis* Low Shrubland;

MhMc: *Melaleuca huegelii* / *M. cardiophylla* Tall Open Scrub to Low Open Forest over *Rhagodia baccata* / *Threlkeldia diffusa* Low Shrubland; and

Mc: *Melaleuca cardiophylla* Tall Open Scrub over *Rhagodia baccata* / *Threlkeldia diffusa* Low Shrubland.

The surveyed areas also included some small areas of bare sand, adjacent to the existing sand mining operation at the northern end of the application area.

Clearing Description Dongara Lime Sands.
Cockburn Cement Ltd proposes to clear up to 145.4 hectares of native vegetation within a boundary of approximately 252 hectares, for the purpose of sand mining and associated activities. The project is located approximately one kilometre southeast of Port Denison, within the Shire of Irwin.

Vegetation Condition Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).
to

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

Comment

The vegetation condition was derived from a vegetation survey conducted by PGV (2019).

The proposed clearing is for the expansion of an existing sand mining operation, which commenced in 1995.

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 Lesueur Sandplain sub-region of the Interim Biogeographic Regionalisation for Australia (IBRA) Geraldton Sandplains Bioregion (GIS Database). The Lesueur Sandplain subregion is characterised by proteaceous scrub-heaths, rich in endemics, on a mosaic of lateritic mesas, sandplains, coastal sands and limestones (CALM, 2002). The clearing permit application area occurs on coastal sand dunes, and is located approximately one kilometre from the coastline at its nearest point (GIS Database).

PGV (2019) conducted a flora and vegetation survey over parts of the clearing permit application area, between 8 and 10 September 2019, covering in total approximately 81 hectares of the 252 hectare application area. A total of 35 native flora taxa and 13 weed species were recorded within the nine survey quadrats located within the application area (PGV, 2019). Analysis of aerial imagery indicates that substantial parts of the clearing permit application area that were not included in the survey appear to be well vegetated (GIS Database).

Database searches conducted by PGV (2019) identified a large number of conservation significant flora with the potential to occur within the application area based on known distributions. PGV (2019) considered that 12 of these flora taxa could "possibly" occur within the survey area, based on habitat preferences. These included one Threatened flora taxon, *Conostylis dielsii subsp. teres* (T), and the following 11 Priority flora taxa: *Comesperma griffinii* (P2), *Schoenus* sp. Eneabba (F. Obbens & C. Godden 1154) (P2), *Scholtzia calcicola* (P2), *Anthocercis intricata* (P3), *Baeckea* sp. Walkaway (A.S. George 11249) (P3), *Grevillea hirtella* (P3), *Haloragis foliosa* (P3), *Thryptomene* sp. Lancelin (M.E. Trudgen 14000) (P3), *Banksia elegans* (P4), *Eucalyptus zopherophloia* (P4), and *Stawellia dimorphantha* (P4) (PGV, 2019).

No conservation significant flora were recorded during the survey conducted by PGV (2019). However, DBCA (2020a) advised that the survey was not adequate to conclude that no conservation significant flora species occur within the application area, as the survey covered only approximately one third of the current clearing permit application area, and was not conducted at the appropriate time of year for some of the conservation significant flora species, and was based on quadrat sampling. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a flora management condition, which requires a minimum of a targeted on-site survey for conservation significant flora to be conducted over the sections of the application area which have not been recently surveyed. The targeted survey/s should be conducted over suitable habitats for the targeted species and coincide with the flowering periods of the targeted species. The survey results must be submitted to DMIRS, before any clearing within those areas is approved.

A previous survey conducted over M70/311 in November 1998 recorded *Anthocercis intricata* (P3) within the tenement (Kinhill, 1999). These populations were not within the areas surveyed by PGV (2019) but appear to be within the current clearing permit application area (DBCA, 2020a; Kinhill, 1999). *Anthocercis intricata* has also been previously recorded at the site of another sand mining operation located approximately one kilometre north of this application area (DBCA, 2020a). The current application area appears to contain a large amount of suitable habitat for *Anthocercis intricata*, and further survey is recommended to determine the impact of the proposed clearing to this species. However, *A. intricata* has a range of approximately 150 kilometres east-west and approximately 400 kilometres north-south, and is well represented in conservation estate including the Kalbarri National Park and to a lesser extent the Beekeepers Nature Reserve (DBCA, 2020a; Western Australian Herbarium, 2020), hence the proposed clearing is unlikely to impact the conservation status of this species.

There are no known Threatened or Priority Ecological Communities located within the application area (GIS Database), and none were recorded during the flora and vegetation survey conducted over parts of the application area (PGV, 2019).

A recent fauna survey has not been conducted over the application area. A five year biological monitoring programme conducted over M70/311 between 1996 and 2001, included a fauna component and covered much of the current application area. No species of conservation significant fauna were recorded during the biological monitoring programme, however it was noted that some fauna of conservation significance had the potential to occur (Kinhill, 1997). A fauna survey over the current application area is recommended, conducted in accordance with the relevant EPA Technical Guidance for fauna surveys, and should include targeted searches for fauna of conservation significance considered likely or possible to occur within the application area (DBCA, 2020a).

The application area includes an existing operational minesite, and some previous disturbance has occurred from mineral exploration, and access tracks (PGV, 2019; GIS Database). PGV (2019) reported that the vegetation within the surveyed areas was largely undisturbed, apart from the existing sand mining operation. However, 13 weed species were recorded within the application area during the flora survey (PGV, 2019). Weeds have the potential to out-compete native species and reduce the biodiversity of an area, and care should be taken to prevent the introduction or spread of weeds in the application area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition on the permit.

The vegetation associations, fauna habitats and landform types present within the application area, are well represented in surrounding areas (DBCA, 2020a; PGV, 2019; GIS Database). The application area is unlikely to represent an area of higher biodiversity than surrounding areas, in either a local or regional context.

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

Methodology CALM (2002)
DBCA (2020a)
Kinhill (1997)
Kinhill (1999)
PGV (2019)
Western Australian Herbarium (2020)

GIS Database:
- IBRA Australia
- Imagery
- Pre-European Vegetation
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers
- Threatened and Priority Flora
- 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 fauna survey has not been conducted over the application area. Based on the vegetation associations described by PGV (2019), the fauna habitat within the surveyed areas can be broadly described as: sand dunes and swales, supporting vegetation of tall open scrub to low open forest, over low shrubland or open low heath.

These habitat types extend outside of the application area and are well represented in surrounding areas including in the nearby Beekeepers Nature Reserve (DBCA, 2020a; PGV, 2019; GIS Database).

There are no known records of Threatened fauna within the application area (GIS Database). Desktop searches of available databases, recorded several fauna species of conservation significance (mostly birds) with the potential to occur within the application area (PGV, 2019).

Biological monitoring over the application area conducted between 1996 and 2001 noted that Malleefowl, *Leipoa ocellata* (VU) may occur in the local area. Malleefowl has been recorded approximately 20 kilometres south of the application area within Beekeepers Nature Reserve (DBCA, 2020a). Malleefowl tend to construct mounds in areas with a dense canopy, sandy substrate and abundant leaf litter, within shrublands and woodlands and often associated with mallee and acacia species (DBCA, 2020a). Malleefowl may forage through the application area, however the habitat types within the application area may not be suitable for breeding (DBCA, 2020a). A targeted survey for Malleefowl mounds is recommended prior to clearing, and if any active mounds are found, they should be avoided until after the chicks have hatched and dispersed (DBCA, 2020a). Potential impacts to malleefowl may be minimised by the implementation of a malleefowl management condition on the permit.

Chuditch, *Dasyurus geoffroyi* (VU) has been recorded approximately three kilometres north-east of the application area within a similar vegetation type, although associated with the Irwin River (DBCA, 2020a). Chuditch are capable of travelling long distances and have large home ranges of up to 15 square kilometres for males and up to four square kilometres for females (DBCA, 2020a; 2020b), and are considered likely to occur within the application area (DBCA, 2020a). The Black-striped Burrowing Snake, *Neelaps calonotos* (P3) has been recorded less than one kilometre to the west, and is also likely to occur within the application area (DBCA, 2020a). However, there are extensive areas of similar habitats in surrounding areas (GIS Database). Although conservation significant fauna may forage through the application area, most are highly mobile and none are likely to be specifically dependant on the vegetation proposed to be cleared.

The proposed clearing of up to up to 145.4 hectares of native vegetation within a boundary of approximately 252 hectares, conducted in small sections followed by progressive rehabilitation, is unlikely to significantly disrupt fauna movement corridors through the application area.

The fauna habitats within the application area are likely to be similar to those occurring in similar dune areas outside of the application area. As there are large areas of similar habitat available in the local area, the vegetation proposed to be cleared is unlikely to represent significant fauna habitat in a local or regional context.

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

Methodology DBCA (2020a)
DBCA (2020b)
PGV (2019)

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 may be at variance to this Principle

Database searches conducted by PGV (2019) identified one Threatened flora taxon, *Conostylis dielsii* subsp. *teres* (T), with the potential to occur within the application area based on known distributions and habitat preferences.

PGV (2019) reported that no species of Threatened flora were recorded during the survey conducted over parts of the application area. However, DBCA (2020a) advised that the survey was not conducted at the appropriate time of year for this species, and a targeted survey over suitable habitats and conducted during the flowering period is recommended to determine the presence or absence of *Conostylis dielsii* subsp. *teres* within the application area.

Potential impacts to threatened flora as a result of the proposed clearing may be minimised by the implementation of a flora management condition, which requires a minimum of a targeted on-site survey for conservation significant flora to be conducted over the sections of the application area which have not been recently surveyed.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology DBCA (2020a)
PGV (2019)

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 over parts of the application area did not identify any TECs (PGV, 2019).

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

Methodology PGV (2019)

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 Lesueur Sandplain sub-region of the Geraldton Sandplains Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Less than 45 percent, of the pre-European vegetation remains within the Lesueur Sandplain sub-region and the Geraldton Sandplains bioregion (Government of Western Australia, 2019), which is classed as “Depleted” according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002). The dominant land-use of the Geraldton Sandplains bioregion is agriculture (CALM, 2002) and a substantial part of the bioregion has been cleared for agricultural and community purposes (GIS Database). However, the sand dune areas within the region are less suitable for agriculture and hence these areas have retained a higher level of vegetation.

The clearing permit application area occurs on coastal sand dunes, located between one kilometre and up to approximately 2.5 kilometres from the coastline (GIS Database). The application area is broadly mapped as Beard vegetation associations: 17: Shrublands; *Acacia rostellifera* thicket; 432: Shrublands; *Acacia rostellifera* and *Melaleuca cardiophylla* thicket; and 772: Shrublands; *Acacia lasiocarpa* and *Melaleuca acerosa* heath (GIS Database). More than 80% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2019). At the sub-regional level, vegetation association 17 retains approximately 70% of its original extent, while vegetation associations 432 and 772 retain more than 90% of their original extents (Government of Western Australia, 2019), which gives them a classification of “Least Concern” (see table below) (Department of Natural Resources and Environment, 2002).

Large areas of similar vegetation persist in close proximity to the application area (GIS Database), including within the nearby Beekeepers Nature Reserve (GIS Database). 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 (and post clearing %)
IBRA Bioregion – Geraldton Sandplains	3,136,037	1,404,424	~44	Depleted	18.24 (40.46)
IBRA Subregion – Lesueur Sandplain	1,171,775	502,977	~42	Depleted	18.36 (42.25)
Local Government – Irwin	236,968	117,014	~49	Depleted	12.17 (24.48)
Beard vegetation associations – WA					
17	76,633	67,605	~88	Least Concern	11.56 (13.06)
432	5,732	5,101	~88	Least Concern	52.64 (58.83)
772	4,827	4,615	~95	Least Concern	79.27 (81.15)
Beard vegetation associations – Geraldton Sandplains Bioregion					
17	54,078	45,159	~83	Least Concern	11.24 (13.44)
432	5,636	5,101	~90	Least Concern	53.54 (58.83)
772	4,808	4,615	~95	Least Concern	79.49 (81.15)
Beard vegetation associations – Lesueur Sandplain subregion					
17	4,473	3,143	~70	Least Concern	11.15 (15.76)
432	5,636	5,101	~90	Least Concern	53.54 (58.83)
772	4,808	4,615	~95	Least Concern	79.49 (81.15)

* Government of Western Australia (2019)

** Department of Natural Resources and Environment (2002)

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

Methodology CALM (2002)
Department of Natural Resources and Environment (2002)
Government of Western Australia (2019)

GIS Database:
- IBRA Australia
- Imagery
- 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 or in close proximity to the area proposed to clear (Cockburn Cement, 2020; PGV, 2019; GIS Database).

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

Methodology Cockburn Cement (2020)
PGV (2019)

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 may be at variance to this Principle**

The application area is broadly mapped as land units of the Quindalup land system (DPIRD, 2020). The Quindalup land system includes coastal and fore-dunes, and soils are described as loose to moderately cemented fine to medium grained calcareous deep and shallow sands (DPIRD, 2020). The soils within the application area are broadly mapped as soil type A13 (GIS Database), which Northcote et al., (1960–1968) describes as: "Coastal dune formations backed by the low-lying deposits of inlets and estuaries: chief soils are calcareous sands on the dunes".

The application area occurs on sand dunes (GIS Database), which are naturally subject to wind erosion, however the removal of vegetation cover from the dunes may result in increased rates of wind erosion. Cleared areas of the Quindalup dunes have the potential to become destabilised and mobilise under strong prevailing winds (DBCA, 2020a; DPIRD, 2020).

Potential erosion as a result of the proposed clearing may be minimised by the implementation of staged clearing conditions and a rehabilitation condition, which restrict the timing of vegetation clearing activities to less than three months prior to the commencement of sand extraction activities; limit the area which can be open for sand mining at any one time to 10 hectares; and require progressive rehabilitation of mined areas.

Provided the above management measures are implemented, the risk of appreciable land degradation will be minimised.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology DBCA (2020a)
DPIRD (2020)
Northcote et al. (1960-1968)

GIS Database:
- Soils, Statewide

(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 may be at variance to this Principle**

The application area does not fall within any conservation areas, however it is in close proximity to the Beekeepers Nature Reserve, sections of which are located both to the east and to the south of the application area (GIS Database). Part of the eastern boundary of the application area runs parallel with the western boundary of a small section of the reserve which lies north of Kailis Drive. The eastern boundary of the clearing permit application area was initially located only 10 metres from the Nature Reserve boundary. However, during the course the assessment, the eastern boundary of the clearing permit area and the

proposed project footprint was cut back to 25 metres away from the Nature Reserve boundary, consistent with commitments made in the Mining Proposal submitted for this project (Cockburn Cement, 2020). The resultant vegetation buffer of 25 metres separating the proposed clearing area and the reserve boundary, is intended to minimise potential impacts to the reserve such as dust, weed invasion and edge effects. The southern boundary of the application area is approximately 400 metres north of the main section of the Beekeepers Nature Reserve which lies to the south of Kailis Drive (GIS Database).

The clearing permit application area forms part of a strip of coastal sand dunes which extend in a north-south direction and connect with the Beekeepers Nature Reserve. The proposed clearing will reduce the vegetation linkages to the Beekeepers Nature Reserve. However, the proposed clearing will occur in small sections, with rehabilitation of excavated areas occurring progressively as the sand mining face moves across the site (Cockburn Cement, 2020). Impacts to ecological linkages may be minimised by staged clearing conditions and a rehabilitation condition on the permit which: restrict the timing of vegetation clearing activities to less than three months prior to the commencement of sand extraction activities; limit the amount of area which can be open for mining at any one time to 10 hectares; and require progressive rehabilitation of mined areas.

The proposed clearing of up to up to 145.4 hectares of native vegetation within a boundary of approximately 252 hectares, conducted in small sections, followed by progressive rehabilitation is unlikely to significantly disrupt ecological linkages through the sand dune vegetation.

The vegetation buffer between the application area and the nature reserve, combined with the staged clearing approach and progressive rehabilitation of cleared areas, will minimise any potential impacts to the environmental values of the Beekeepers Nature Reserve or any other conservation area.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology Cockburn Cement (2020)

GIS Database:
- DPaW Tenure
- Imagery

(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 area proposed to clear (GIS Database).

The proposed clearing is unlikely to cause deterioration in the quality of surface or 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 at variance to this Principle**

There are no water courses or wetlands within or in close proximity to the application area (GIS Database). The sandy soils of the application area are highly permeable and any surface water resulting from rainfall is likely to be quickly absorbed, making flooding unlikely. However, should flooding occur following significant rainfall events, it is unlikely to be caused or exacerbated by the proposed clearing of native vegetation.

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

Methodology GIS Database:
- Hydrographic Catchments – Catchments
- Hydrography, Lakes
- Hydrography, linear

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

Comments

The clearing permit application was advertised on 25 May 2020 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 is one native title claim (WC2019/008) over the area under application (DPLH, 2020). 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 no registered Aboriginal Sites of Significance within the application area (DPLH, 2020). 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.

Methodology DPLH (2020)

4. References

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.
- Cockburn Cement (2020) Mining Proposal Reg ID86836. M70/311 & M70/917 "Dongara Lime Sand". South-West Mining District Western Australia. Report prepared for Cockburn Cement Limited, by Austwide Mining Title Management Pty Ltd. Version 2, September 2020.
- DBCA (2020a) Advice received in relation to Clearing Permit Application CPS 8883/1. Species and Communities Branch, Department of Biodiversity, Conservation and Attractions, Western Australia, November 2020.
- DBCA (2020b) Fauna Profile – Chuditch *Dasyurus geoffroii*. Department of Biodiversity, Conservation and Attractions. https://www.dpaw.wa.gov.au/images/documents/plants-animals/animals/animal_profiles/chuditch_fauna_profile.pdf (Accessed 4 December 2020).
- 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.
- DPIRD (2020) Advice received in relation to Clearing Permit Application CPS 8883/1. Office of the Commissioner of Soil and Land Conservation, Department of Primary Industries and Regional Development, Western Australia, June 2020.
- DPLH (2020) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 25 November 2020).
- 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, Perth. <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.
- Kinhill (1997) Dongara Lime Plant. 5 Year Biological Monitoring Survey. 1996 Biological Annual Report. Report prepared for Cockburn Cement Limited, by Kinhill Engineers Pty Ltd, January 1997.
- Kinhill (1999) Dongara Lime Plant. 5 Year Biological Programme. Flora and Vegetation Survey. Report prepared for Cockburn Cement Limited, by Kinhill Pty Ltd, April 1999.
- Northcote, K. H. with Beckmann G.G., Bettenay E., Churchward H.M., van Dijk D.C., Dimmock G.M., Hubble G.D., Isbell R.F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
- PGV (2019) Dongara Lime Sands M70/311, M70/917, P70/1735, E70/355, E70/5041, M70/642. Report prepared for Cockburn Cement Ltd, by PGV Environmental, December 2019.
- Western Australian Herbarium (2020) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> (Accessed 25 November 2020).

5. Glossary

Acronyms:

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

Definitions:

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

T **Threatened species:**

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

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

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

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

CR **Critically endangered species**

Threatened species considered to be “*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU**Vulnerable species**

Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:**EX****Extinct species**

Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW**Extinct in the wild species**

Species that “*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

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

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

MI**Migratory species**

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

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

CD**Species of special conservation interest (conservation dependent fauna)**

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS**Other specially protected species**

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P**Priority species:**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1**Priority One - Poorly-known species**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2**Priority Two - Poorly-known species**

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3**Priority Three - Poorly-known species**

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4**Priority Four - Rare, Near Threatened and other species in need of monitoring**

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.