Department of Energy, Mines, Industry Regulation and Safety

GOVERNMENT OF WESTERN AUSTRALIA

Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	10344/1
Permit type:	Purpose Permit
Applicant name:	Regen Scott Grant
Application received:	28/08/2023
Application area:	47.4 hectares
Purpose of clearing:	Gypsum extraction and associated activities
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 70/1382
Location (LGA area/s):	Shire of Lake Grace
Colloquial name:	Lake Lockhart Gypsum Mine

1.2. Description of clearing activities

Regen Scott Grant (Lakeside Minerals) proposes to clear up to 47.4 hectares of native vegetation within a boundary of approximately 47.4 hectares, for the purpose of gypsum extraction and associated activities. The project is located approximately 19 kilometres south of Newdegate, within the Shire of Lake Grace.

The application is to allow for gypsum extraction. Aproximatly 47.4 hectares of native vegetation is proposed to be cleared within Mining Lease 70/1382

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	19 December 2024
Decision area:	47.4 hectares of native vegetation

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E and 51O of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Energy, Mines, Industry Regulation and Safety (DMIRS) on 17 November 2023, for an area of 27 hectares. DEMIRS advertised the application for a public comment for a period of 21 days, and no submissions were received. An additional area of 20.4 hectares of clearing was added to the permit on 19 November 2024 DEMIRS advertised the application for a public comment for a period of 7 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A), relevant datasets (Appendix E), supporting information provided by the applicant including the results of a flora and vegetation survey (Appendix D), the clearing principles set out in Schedule 5 of the EP Act (Appendix C), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- impacts to conservation significant flora;
- the loss of native vegetation that is suitable habitat for malleefowl (Leipoa ocellata) and western brush wallaby
- potential land degradation in the form of wind 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 managed by conditions and is not likely 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 ;
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;

- staged clearing to minimise wind erosion;
- retain cleared vegetation and topsoil and respread this on a cleared area of equivalent size within the adjacent existing gravel extraction area within 12 months of clearing to ensure fauna habitat is not permanently lost.
- avoid the clearing of riparian vegetation and ensure that the existing surface flow of Lake Lockhart is maintained.
- Avoid Priority Flora

1.5. Site map

A site map of proposed clearing is provided in Figure 1 below.

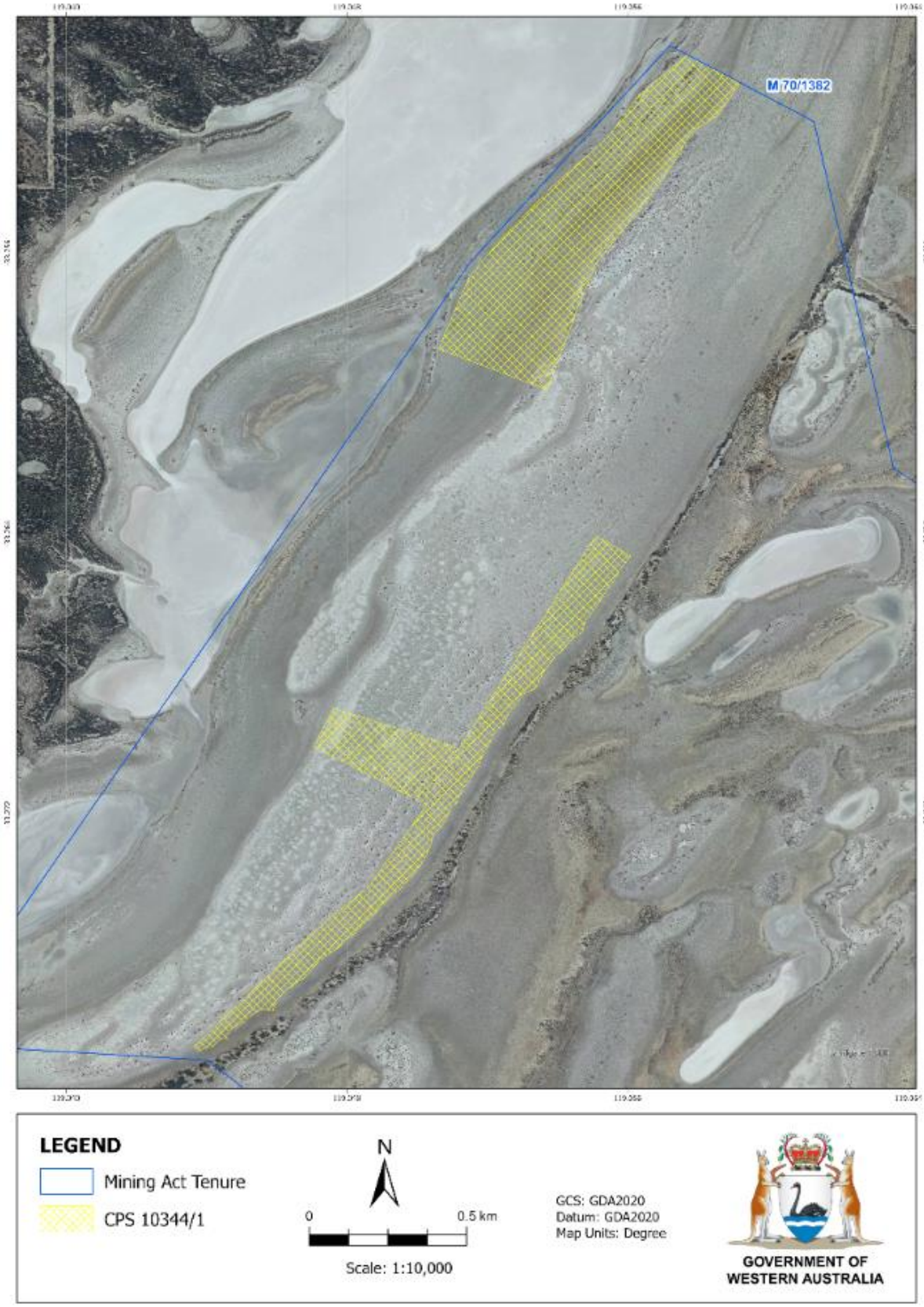

Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit.

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)
- *Country Areas Water Supply Act 1947* (WA) (CAWS 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 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016) (Delete if flora surveys not included)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values. Accendo (2022, 2024) advised that:

- The *Fitzwillia axilliflora* (P2) population, comprised of approximately 330 individuals occurring within the application will be avoided during the clearing process (a 20 metre buffer to all conservation significant flora and vegetation will be demarcated); and
- clearing will be undertaken on an as needs basis and clearing areas will be progressively rehabilitated at the end of each mining season (November to April).

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see **Error! Reference source not found.**) 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 identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and vegetation), and land and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values Biodiversity, flora ,Clearing Principle (a)

Assessment

A total of 142 flora species were recorded over the tenement including the application area and by Rick (2019) of which 13 were introduced species. Of the 50 priority (P) species record in the local area (20 kilometre radius) (GIS Database), 12 priority species were recorded by Rick, (2019). An additional targeted flora survey of the application area, carried out by Plant Ecology Consulting (2024) recorded the Priority 2 flora species, *Goodenia salina* increasing the number of Priority species to 13 and total species count to 143.

Of the 13 Priority flora species recorded in the application area, *Fitzwillia axilliflora* (P2) was recorded within the area of proposed clearing. The survey carried out by Plant Ecology Consulting (2024) recorded 330 individuals (see Figure 3), within the application area, however the proponent has committed to avoid, this population (see section 3.1).

A new species to Western Australia, currently named Fitzwillia sp. Newdegate (P1) was discovered within the tenement. Fitzwillia sp. Newdegate was collected as *Fitzwillia* aff *axilliflora* during the Rick (2019) survey and confirmed as a new species in 2021 (DBCA, 2024). *Fitzwillia* sp. Newdegate is currently only known to occur within the Lake Side Minerals tenement and was recorded at 12 locations (Rick 2019), however an estimate of the number of individuals was not taken. A targeted flora survey was carried out by Plant Ecology Consulting (2024), which did not record any occurrence of *Fitzwillia* sp. Newdegate within the clearing area. Fitzwillia sp. Newdegate appears to be associated with the vegetation at the edge of gypsum dunes (Rick 2019) following the perimeter of an area of lake Lockhart where water persists for longer periods (see Figure 2.). Although *Fitzwillia* sp. Newdegate was recorded less than 100 meters northwest of the proposed clearing (see Figure 2.) the above habitat does not occur within the application area therefore it is unlikely to be impacted by the proposed clearing.

Angianthus halophilus (P3) and *Frankenia* sp. Southern Gypsum (P3) were also recorded less than 100 meters from the the application area however the targeted survey carried out by Plant Ecology Consulting (2024) did not record any occurrence of these species, within the application area.

Given that the application area is situated within a lakebed comprised saline and gypsiferous clay and silts (DPIRD, 2023), an analysis of the remaining priority flora listed in Appendix A3 indicates that suitable soils and habitat characteristics are absent from the application area. The remainder of the priority flora in listed in Appendix A3 were determined to be associated with sandy duplex soils (Flora Western Australian Herbarium 1998) and unlikely to occur within the application area.

Two Priority Ecological Communities (PECs) have been mapped (GIS Database) within the local area (see to appendix A.5). According to available data sets the Priority 3 Assemblages of gypsum dunes of the central and southern Wheatbelt, (Gypsum Dunes PEC) is mapped within the application area. The PEC occurs on gypsum dunes that vary from 0.25m to 20m or more but most are only a few meters high. The dunes extend around the southern and eastern shores of salt lakes. Dunes vary in composition with clay, sand, gypsum and other materials occurring in various mixtures, and layering (DBCA, 2024). Floristic composition can very, a range of genera and species including *Eucalyptus*, *Melaleuca*, *Callitris, Actinostrobus, Allocasuarina* and *Casuarina obesa*, and *Chenopodiacea*e, grasses and a wide range of other shrubs and perennial herbs occur in the community. Typical flora are from the genera *Atriplex*, *Austrostipa*, *Callitris*, *Casuarina*, *Eucalyptus*, Melaleuca, Darwinia, Rhagodia, Lawrencia, Maireana and Leucopogon. Some of these are less tolerant of salt and waterlogging but species such as *Tecticornias* and *Dysphyma crassifolia* may be present. (DBCA, 2024). Rick (2011) also found the plant species associated with gypsum dunes were also widespread in other soil types and named only 10 possible gypophiles (gypsum specialists), these include:

- *Angianthus globuliformis* (P1)
- *Austrostipa geoffreyi* (P1)
- Chondropyxis halophila
- *Frankenia sp.* Southern Gypsum (P3)
- *Goodenia integerrima* (T)
- *Goodenia salina* (P2)
- *Hydrocotyle hexaptera* (P1)
- *Hydrocotyle* sp.Truslove (M.A. Burgman 4419) (P1)
- *Kippistia suaedifolia*
- *Minuria gardneri*

To investigate the abundance and distribution of the Gypsum Dunes PEC within the Lake Side Minerals tenement, the proponent commissioned a floristic survey (Plant Ecology Consulting, 2024). Vegetation within the application area was mapped as, Low shrubland of *Tecticornia* ?*halocnemoides* subsp. *caudata* with *Tecticornia* ?*loriae* and *Tecticornia* sp. on clays of saline lakebed (Plant Ecology Consulting, 2024).. Although *Tecticornia* species, are often found in the floristic composition of the Gypsum Dune PEC (Rick 2011), the flora within the clearing area was not match the criteria (Plant Ecology Consulting 2024), primarily on the basis of the gypsum dune landform's absence from the application area. It is noted, that the gypsum dune landform and two of the plant species listed above were recorded at various locations within the tenement, however the two diagnostic features did cooccur within the application area, therefore it is unlikely that Gypsum Dunes PEC is present.

Eucalyptus Woodland of the West Australian Wheatbelt PEC, state listed a P3 and a Federally listed TEC categorised as critical was also mapped within the local area (GIS Database). However, surveys carried out by Rick (2019) and Plant Ecology Consulting (2024) did not find any vegetation that met the key diagnostic characteristics of the Eucalyptus Woodland of the West Australian Wheatbelt PEC within the application area.

With regard for the extent, composition and condition of the vegetation proposed to be cleared, it is considered that conservation significant flora and ecological communities are unlikely to be impacted by the proposed clearing. However, there is potential that the proposed clearing activities could result in the introduction or spread of weeds and dieback (Phytophthora spp) into adjacent vegetation, which could impact on its habitat quality and connectivity.

Conclusion:

For the reasons set out above, and the avoidance and measures provided by Lake side Minerals, it is considered that the potential impacts of the proposed clearing on biological values can be managed by taking steps to minimise the risk of the introduction and spread of weeds and dieback.

Conditions:

To address the above impacts, the following condition will be added to the permit:

- Implement weed management measures to mitigate impacts to adjacent vegetation.
- Avoid the area containing the priority 2 species *Fitzwillia axilliflora*

3.2.2. Biological values fauna habitat, Clearing Principle (b)

There are seven conservation significant fauna species that have been recorded in the local area. Based on the vegetation types mapped in the application area is unlikely significant feeding and breeding habitat occurs for the majority for these species.

Carnaby's cockatoo (*Zanda latirostris*) has been recorded in the local area however, there is no suitable breeding or roosting habitat present within the application area (GIS Database). Some suitable foraging habitats may be present in areas were Myrtaceae and Proteaceae shrubs dominate, however these areas too small to be of significant impact to the available Carnaby's cockatoo foraging habitat in the local area.

There are three records for Red-tailed phascogale, kenngoor (*Phascogale calura*), in the local area (GIS Database). As this is an arboreal species, suitable habitat is unlikely to occur within the application area. Western Brush Wallaby (*Notamacropus Irma*) has three records in the local area and may range through the application area and utilise small areas of shrubland as feeding habitat.

Malleefowl is well recorded within the local area (58 records) and may utilise the shrublands occurring within the application area (GIS Database). A targeted fauna survey was carried out by Bamford Consulting Ecologists (2022) including an area salt lake adjoining the application area. The survey found no active or inactive Malleefowl mounds and the area was considered to have unsuitable habitat for this species as it does not support the construction of Malleefowl mounds (Bamford, 2022).

Three records occur within the local area for Western whipbird (*Psophodes nigrogularis* subsp. *oberon*) including one by Bamford Consulting Ecologists (2022) recoded in vegetation adjacent to the application area. It is unlikely breeding habitat for Western whipbird occurs in the application area as this species requires dense thickets with a dense undergrowth for nesting (Beruldsen, 2004). The Western whipbird may utilise the small areas of shrubland within the application area for foraging.

Hooded plover (*Thinornis rubicollis)* and Red-necked stint (*Calidris ruficollis*) are likely to range through the application area and utilise Lake Lockhart as foraging habitat when inundated. The proposed clearing is unlikely to significantly affect the amount of available foraging habitat for these species, as Lake Lockhart forms part of an extensive Salt Lake system. The proposed clearing within the lakebed will be undertaken when the lake is dry (Accendo, 2022).

Conclusion:

Based on the above assessment, the proposed clearing will result in some loss in habitat for conservation significant fauna species. Individuals may be impacted by the proposed clearing however, the impact to fauna may be minimised by the implementation of conditions on the permit.

Conditions:

A directional clearing condition which requires slow progressive one directional clearing to allow the species to disperse ahead of the clearing activity.

3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on 17 November 2023 by the Department of Energy Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

There are several native title claims over the area under application (DPLH, 2023). These claims have been registered with the National Native Title Tribunal on behalf of the claimant groups. 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, 2023). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Other relevant authorisations required for the proposed land use include:

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

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

A.1. Site characteristics

Characteristic	Details
Local context	The application area is located approximately 19 kilometres south of Newdegate, the area is part of the seasonally flooded zone of Lake Lockhart, in the extensive land use zone of Western Australia. The site comprises part a patchwork of vegetation types ranging from samphire shrubland to open isolated patches of mallee woodland.
Ecological linkage	According to available databases the application area does not form part of mapped ecological linkages. However, the site does function as an informal ecological linkage connecting saline tolerant vegetation types, comprising an extensive salt lake system.
Conservation areas	The closest conservation area is the Lockhart Nature Reserve, 0.64 kilometres to the northwest. There are 43 land parcels under conservation agreement, in the local area (20 km radius from the centre of the application area) the nearest (conservation area 141) covers an area of 246 hectares (GIS Database).
Vegetation description	The vegetation within the application area is broadly mapped by Beard as: 125: Bare areas; salt lakes. A level 1 (recommence) flora and vegetation survey including the application area was carried out in October 2018 (Rick, 2019). A target survey was also carried out in October 2024 (Plant Ecology Consulting 2024). The following vegetation associations were recorded within the application area (Rick, 2019): Te – Samphire shrubland, of *Tecticornia loriae* and *Tecticornia halocnemoides*
Vegetation condition	The vegetation condition within the survey area was identified as excellent (Keighery 1994) to good, (Keighery 1994). The full Keighery (1994) condition rating scale is provided in Appendix C.

Characteristic	Details
Climate and landform	**Climate**: The annual average rainfall (Newdegate Research Station) is 366.4 millimetres (BoM, 2022). Mean annual temperature range from, 31.3 °C in January to 16.8 °C I July. **Landform:** The application area is mapped with an elevation of 290 metres AHD, and form part of Map Unit Description Chains of large salt lakes, saline valley floors and lunettes in the South-eastern Zone of Ancient Drainage. (DPIRD, 2023).
Soil description	The soils within the application area have been mapped as 250La_1sl is described as consisting of saline and gypsiferous clay and silts (DPIRD, 2023).
Land degradation risk	Land degradation risks for the application area are listed in Table C.6 (DPIRD, 2023).
Waterbodies	The application area intersects Lake Lockhart Mapped as a wheatbelt wetland. (GIS Database).
Hydrogeography	The application area is not within any public drinking water source areas. The mapped groundwater salinity is greater than 35,000 milligrams per litre total dissolved solids which is described as hypersaline (GIS Database).
Flora	The local area contains 58 species of conservation significant flora (GIS Database). Flora records include: • 8 Threatened • 8 Priority 1 • 13 Priority 2 • 18 Priority 3 • 11 Priority 4 The combined results of Rick, (2019) of flora survey carried out by Rick, (2019) and Plant Ecology Consulting (2024) identified 1 species of priority flora - *Fitzwillia axilliflora* Priority 2, occurred with the application area. It was estimated that approximately 330 individuals occur within the application area. The next nearest to the application area is *Frankenia drummondii* Priority 3 occurring 113 meters southeast of the application area (GIS Database). See section A.3 for further analysis of conservation significant flora within the application area.
Ecological communities	Two critically endangered and one priority 3 ecological communities occur in the local area. According to available data sets the Priority 3: Assemblages of gypsum dunes of the central and southern Wheatbelt occurs within the application area. Ecological communities listed in Table A.5
Fauna	There are records of 98 fauna records of conservation significance within the local area representing seven species, see section A.4 for an analysis of these species.

A.2. Vegetation extent

	Pre-European area (ha)	Current extent (ha)	Extent Remaining %	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA Managed Lands
IBRA Bioregion - Mallee	7,395,894	4,180,938	~56.53	1,289,384	18.03
IBRA Subregion - Western Mallee	3,981,718	1,471,048	~36.95	364,866	10.03
Local Area (20km radius)	-	131,160	~40.65	182,116	16.98
Beard vegetation associations - State					
Veg Assoc No: 125	3,485,785	3,146,487	~90.27	265,740	9.29
Veg Assoc No: 511	700,693	520,615	~74.30	105,109	15.37
Veg Assoc No: 519	2,333,414	1,440,062	~ 61.71	244,096	10.54
Beard vegetation associations - Bioregion					
Veg Assoc No: 125	160,327	107,845	~67.27	25,031	26.79
Veg Assoc No: 511	139,877	67,473	48.24	12,343	10.49

Veg Assoc No: 519	2,100,314	1,248,661	59.45	225,928	10.85
Beard vegetation associations - subregion					
Veg Assoc No: 125	81,605	31,802	~38.97	18,448	43.98
Veg Assoc No: 511	139,877	67,472	~48.24	12,343	10.49
Veg Assoc No: 519	1,563,571	783,034	~50.08	196,334	12.68

Government of Western Australia (2018)

A.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), and biological survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Acacia auratiflora	T	N	N	N	>5	3	Y
Acacia depressa	T	N	N	N	>15	1	Y
Acacia lanuginophylla	T	N	N	N	1.1	4	Y
Calectasia pignattiana	T	N	N	N	>10	1	Y
Duma horrida subsp*. abdita*	T	N	N	N	>10	2	Y
Grevillea involucrata	T	N	N	N	>5	10	Y
Tetratheca aphylla subsp*. megacarpa*	T	N	N	N	>15	1	Y
Tribonanthes purpurea	T	N	N	N	>10		Y
Fitzwillia sp. Newdegate	P1	Y	Y	Y	0.05	12	Y
Fitzwillia axilliflora	P2	Y	Y	Y	0	13*	Y
Goodenia salina	P2	N	N	N	1.2	1	Y
Pimelea halophila	P2	Y	Y	Y	2	3*	N
Angianthus halophilus	P3	Y	Y	Y	0.06	4	Y
Frankenia sp. Southern Gypssum	P3	Y	Y	Y	0.01	44*	Y
Frankenia drummondii	P3	N	N	N	2.5	3*	Y
Eremophila serpens	P4	Y	Y	Y	1.3	2*	Y
Eremophila inflata	P4	Y	Y	Y	>10	1	Y
Eremophila veneta	P4	N	N	N	1.3	4	Y
Goodenia salina	P2	N	N	N	1.2	1	Y
Haegiela tatei	P4	Y	Y	Y	1.7	3*	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority *Includes records from (Rick 2019)

A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Carnaby's cockatoo (*Zanda latirostris*)	EN	N	N	<2	8	N/A
Mallefowl (*Leipoa ocellata*)	VU	Y	Y	<2	58	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Hooded plover (*Thinornis rubicollis)*	P4	Y	Y	<5	6	N/a
Red-necked stint (*Calidris ruficollis*)	MI	Y	Y	<15	1	N/A
Red-tailed phascogale, kenngoor (*Phascogale calura*)	VU	N	N	>5	3	N/A
Western brush wallaby (*Notamacropus irma*)	P4	Y	Y	<2	3	N/A
Western whipbird (*Psophodes nigrogularis* subsp. *oberon*)	P4	Y	Y	<2	3	N/A

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, MI Migratory

A.5. Ecological community analysis table

Community name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Eucalyptus Woodland of the West Australian Wheatbelt	Federally listed as CR, state listed as P 3	N	N	N	0.83 km	391	Y
Assemblages of gypsum dunes of the central and southern Wheatbelt	P 3	Y	Y	Y	0	4	Y
Unwooded freshwater wetlands of the southern Wheatbelt of Western Australia, dominated by Duma horrida subsp. abdita and Tecticornia verrucosa across the lake floor (Lake Bryde).	CR	Y	N	Y	16.87	1	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

A.6. Land degradation risk table

Risk categories	*Land Unit 1*
Wind erosion	L1: <3% of the map unit has a high to extreme hazard
Water erosion	L1: <3% of the map unit has a very high to extreme hazard
Salinity	H2: 70% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	L1: o<3% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	L2: <3-10% of the map unit has a moderate to high hazard
Water logging	H2: >70% of the map unit has a moderate to very high to risk
Phosphorus export risk	L2: 3-10% of map unit has a high to extreme phosphorus export risk

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 contains locally significant flora.	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: The area proposed to be cleared contains foraging, habitat for conservation significant fauna.	Not likely to be at variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The flora survey carried out by Rick, (2019) and Plant Ecology Consulting (2024) did not record any of the threatened flora recorded within the local area. Analysis of available spatial data sets indicated, the threatened flora recorded within the local area, are associated with heath and Mallee woodland over sandy duplex soils. Given that the application area is comprised of samphire shrubland over saline, gypsiferous clays and silts, it is unlikely to contain habitat suitable for flora species listed under the BC Act.	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: Eucalyptus Woodland of the West Australian Wheatbelt is mapped within the local area, less than one kilometre from the application area. The area proposed to be cleared does not contain the species soil types that can indicate a threatened ecological community.	Not 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: As indicated in Appendix A.2, the local area retains 40.65 percent of its native vegetation. The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e. pre-European settlement). This is the threshold level below which species loss appears to accelerate (Commonwealth of Australia 2001). Therefore native vegetation cover is consistent with the national objectives and targets for biodiversity conservation in Australia.	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: Given Lockhart Nature Reserve is less than 650 meters from the application area, the, the proposed clearing may have an impact on the environmental values of nearby conservation areas. The application area will adjoin a previously cleared area under clearing permit CPS 6948/2 and may increase the risk of weed infestation within the reserve. Condition Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.	May 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: Given the application area, occurs within Lake Laockhart the proposed clearing is likely to impact on site hydrology and water quality and will impact Samphire shrublands growing in association with this lake (Rick 2019). Potential impacts to saline wetland can be mitigated through the implementation of tenement conditions, specifically, condition 1, 14, 15 and 20 of mining lease 70/1382. Condition: Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a vegetation management condition.	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: Due to the sparse nature of the vegetation and friability of the gypsiferous clay and silts the soils within the application area are highly susceptible to wind erosion. There for it likely the removal of vegetation will increase wind erosion hazard and may possibly result in an increased airborne dust load during high wind events at dry periods of the year. The hazard can be effectively be managed by wetting the surface to generate a surface crust, as gypsum and calcium carbonate form effective crusts on wetting and drying. The crust will develop further on each rainfall event, and can be maintained by limiting traffic to defined pathways (DPIRD, 2022). Condition Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.	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: The application area is naturally highly saline supporting a specialized salt tolerant vegetation. Also the clearing of the vegetation in a staged manor as outlined in the address to principle (g), is unlikely to contribute to further salinity or deterioration in the quality of ground or surface 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 area of proposed clearing is situated within a salt lake, and floods intermitted as a natural function of its ecology. The clearing of native vegetation is therefore unlikely to exacerbate, the incidence or intensity of flooding.	Not 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.
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.

Condition	Description
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. Biological survey information Provided by the applicant.

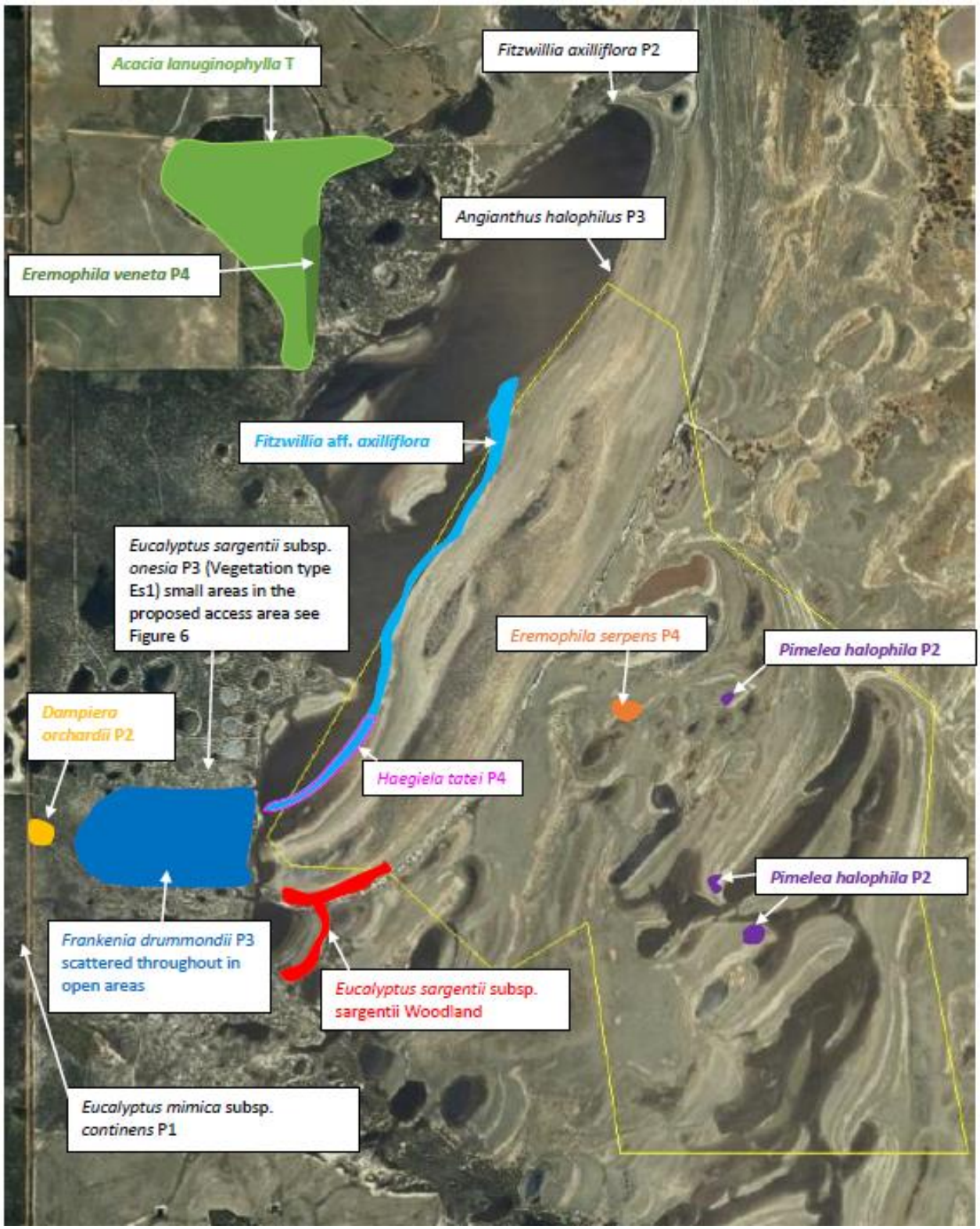

Figure 2. Lake Lockhart and the distribution of conservation significant flora within Tenements M/70/1382, outlined in yellow. (Rick 2019).

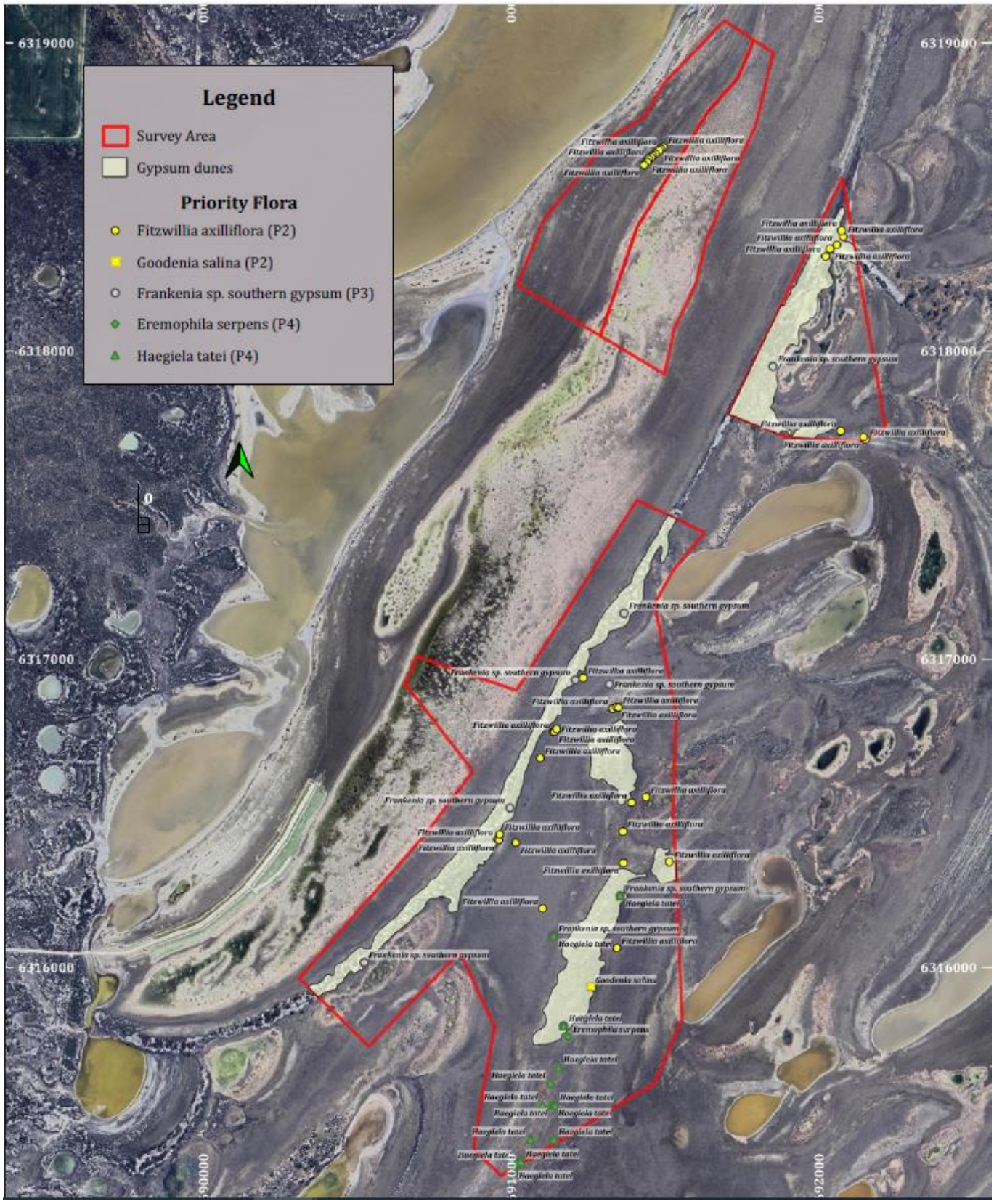

Figure 3. Lake Lockhart and the distribution of conservation significant flora within the survey area. (Plant Ecology Consulting 2024)

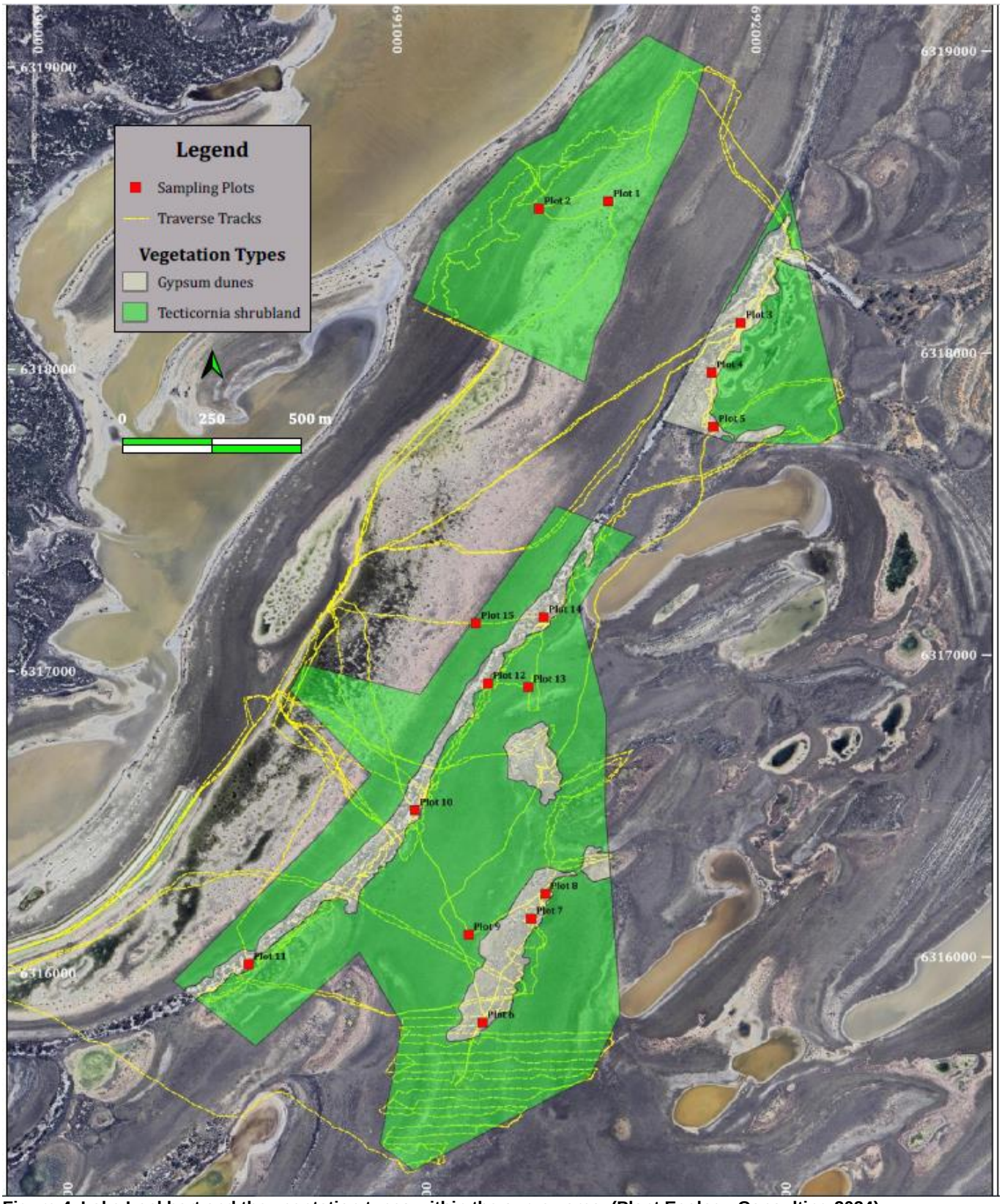

Figure 4. Lake Lockhart and the vegetation types within the survey area. (Plant Ecology Consulting 2024)

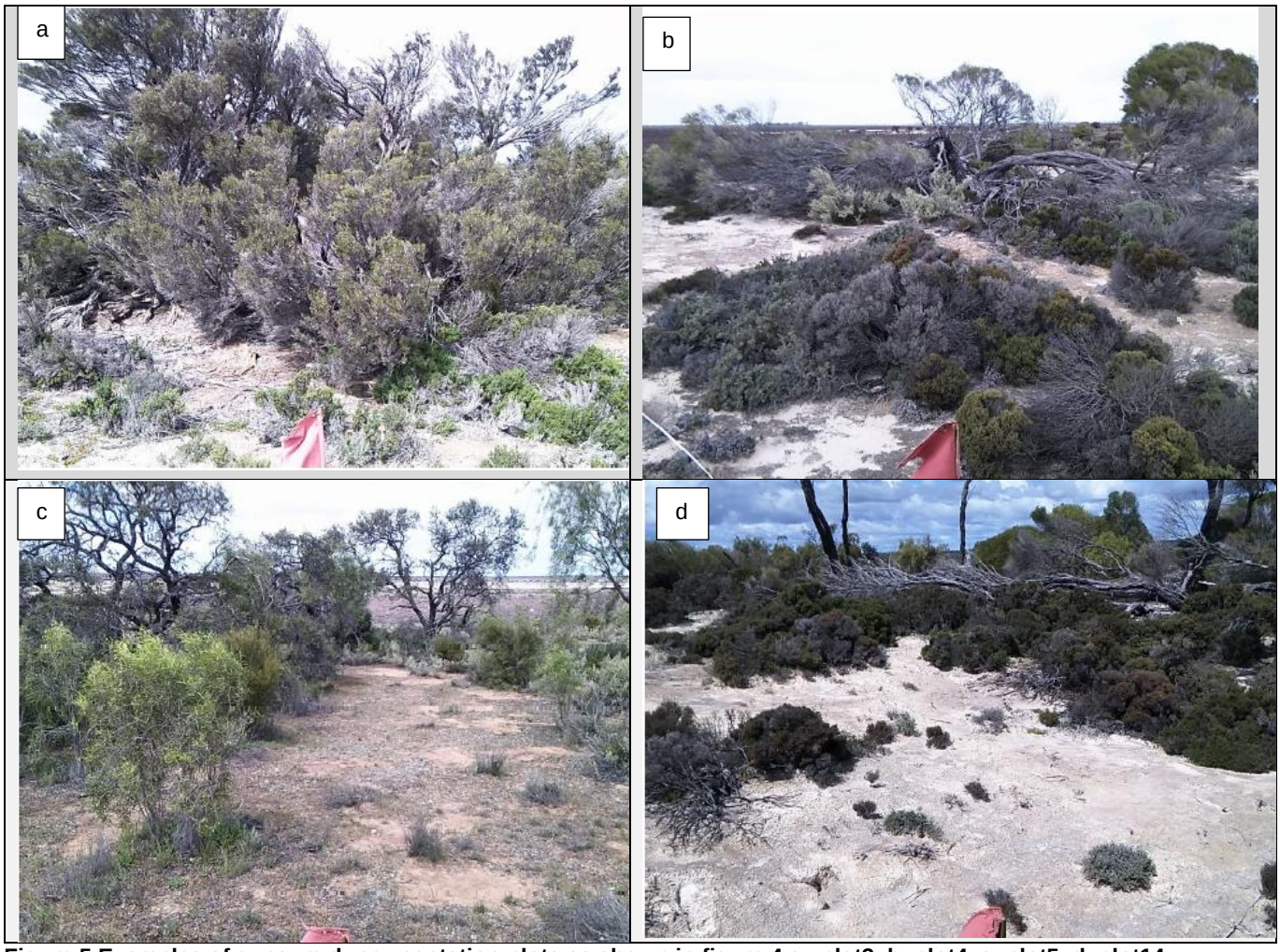

Figure 5 Examples of gypsum dune vegetation plots as shown in figure 4,a =plot3, b=plot4, c=plot5, d=plot14.

Appendix E. Sources of information

E.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Interim Ramsar Sites (DBCA-010)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)

- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- Black Cockatoo WTBC Breeding
- Black Cockatoo FRTBC Breeding
- Black Cockatoo BC Roosts
- Black Cockatoo BC Feeding SCP
- Black Cockatoo Feeding JF
- Black Cockatoo Feeding Areas Buffered
- Black Cockatoo Baudins Distribution
- Black Cockatoo Forest Red Tail Distribution
- Black Cockatoo Carnabys Distribution
- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

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Environmental Protection Authority (EPA) (2016) Technical Guidance – Terrestrial Fauna Surveys. Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf

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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)
DCCEEW	Department of Climate Change, Energy, the Environment and Water, 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 DCCEEW)
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.