Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9086/1
Permit type:	Area permit
Applicant name:	Mr Malcom and Samantha Dempsey
Application received:	14 October 2020
Application area:	3.22 hectares of native vegetation
Purpose of clearing:	Agriculture
Method of clearing:	Mechanical
Property:	Lot 7 on Plan 13938
Location (LGA area/s):	Shire of Serpentine Jarrahdale
Localities (suburb/s):	Oakford

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5). The application is to clear trees and shrubs to enable the area to be used for agricultural purposes.

1.3. Decision on application

Decision:	Refused
Decision date:	22 April 2022
Decision area:	3.22 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and one submission was received. The submission raised concerns about the impact of clearing on black cockatoo breeding and foraging habitat.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix F), the findings of a site inspection (see Appendix E), and the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration advice given by the Department of Primary Industries and Regional Development (DPIRD) via the Office of the Commissioner of Soil and Land Degradation (CSLC).

The assessment identified that the proposed clearing will result in:

- the loss of foraging habitat and future roosting trees for black cockatoo species;
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values; and

- likely to cause appreciable land degradation in the form of waterlogging and eutrophication.

After consideration of the available information, and CSLC (CSLC, 2020) advice, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is likely to lead to appreciable land degradation in the form of waterlogging and eutrophication. The applicant was requested on a number of occasions to provide evidence of mitigation measures, to mitigate the land degradation identified in the assessment, however evidence of such measures has not adequately been provided.

The Delegated Officer decided to refuse a clearing permit.

1.5. Site map

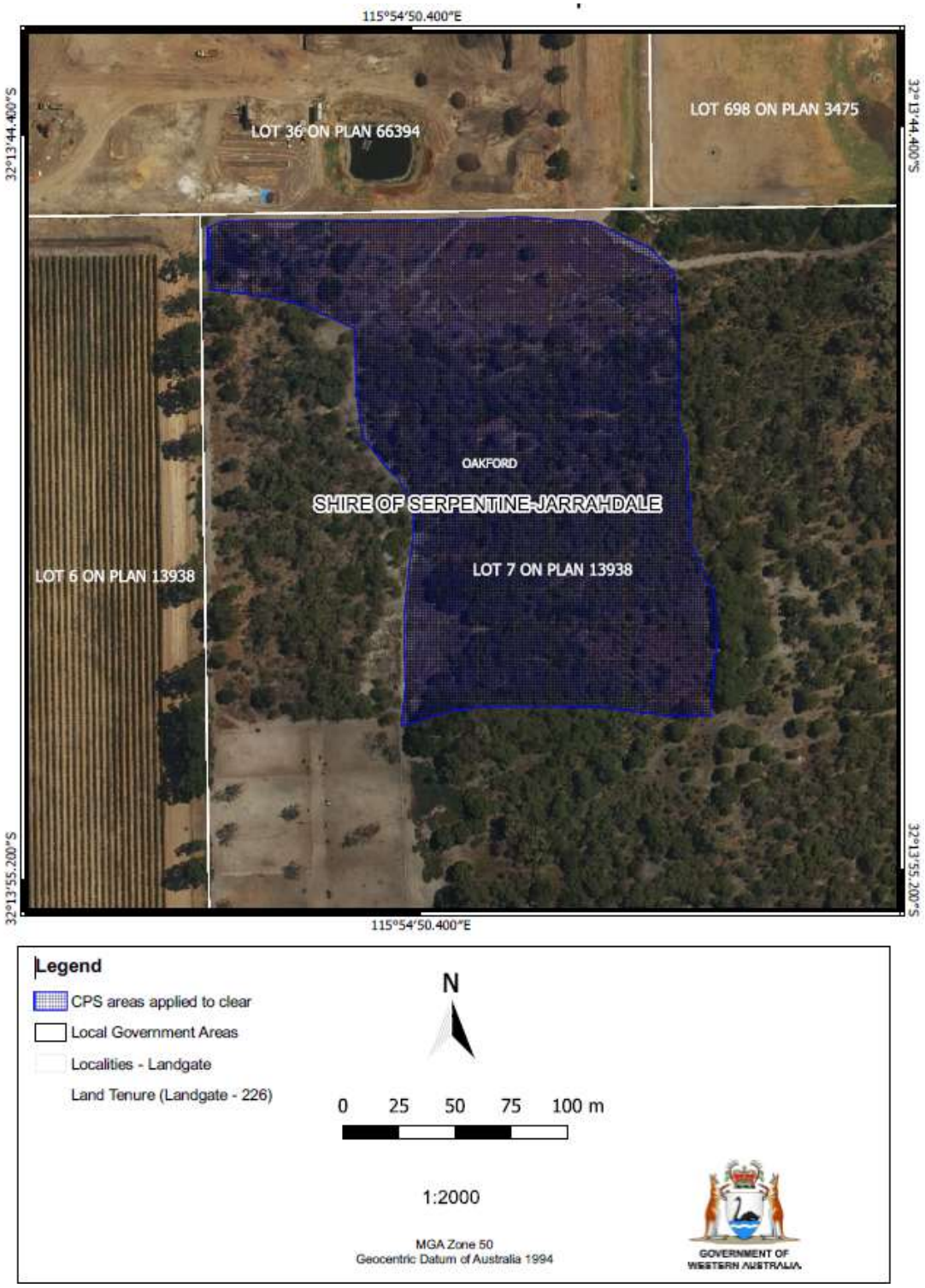

Figure 1 Map of the application area

2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

A site inspection carried out by DPIRD (CSLC, 2020) concluded that the clearing was likely to cause land degradation in the form of waterlogging and eutrophication. To mitigate the above impacts CSLC (2020), advised that the applicant retain as many large/mature trees as possible.

Evidence was submitted by the applicant demonstrating avoidance measures, noting that five hectares of higher quality vegetation would be retained within Lot 7. However, this did not adequately demonstrate that all reasonable efforts had been taken to avoid and minimise potential impacts of the proposed clearing on land degradation and black cockatoo habitat. The applicant failed to provide sufficient information pertaining to the number and location of trees to be retained to mitigate impacts of the proposed clearing on land degradation.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to multiple environmental values including flora, fauna, vegetation and wetlands. 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 (flora and fauna) - Clearing Principles (a, b, c and e)

Assessment

The application area is mapped, in part, as Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region. This community is listed as Endangered under the EPBC Act and as a Priority 4 ecological community by Department of Biodiversity Conservation and Attractions (DBCA). A site inspection (DWER, 2021) confirmed the vegetation in the application area did include some elements of the above vegetation, however most banksia and other proteaceous species were dead and therefore no longer representative of this community. The photographs provided indicate that the vegetation consists of Melaleuca and Kunzea species over a mixed understory of native and non-native grasses and Carpobrotus species.

The application area contains a small number of marri trees which during the site inspection, were not observed to contain hollows but may provide a small amount of foraging habitat for Carnaby's cockatoo and Forest red-tailed black cockatoo. Forest red-tailed black cockatoos were observed to be foraging within the vegetation to the east of the application area. Carnaby's cockatoo forage on native shrubland, kwongan heathland and woodland dominated by proteaceous plant species such as Banksia spp., eucalypt woodland and forest that contains foraging species with their common food items being marri seeds and proteaceous trees and shrubs (Shah, 2006). Forest red-tailed cockatoos foraging on jarrah and marri woodlands and forest, and the edges of karri forest including wandoo and

blackbutt, within the range of the species with their common food items being marri and jarrah seeds and seeds of introduced eucalypt trees.

Roosting habitat for Carnaby's cockatoo is near riparian environments or natural and artificial permanent water sources. Roosting habitat for Forest red-tailed cockatoo includes tall jarrah, marri, blackbutt, tuart and introduced eucalypt trees within or on the edge of forests. Available databases note there are 30 records of black cockatoo roost sites within the local area.

Breeding habitat for Carnaby's cockatoo is described as being within woodland or forests but also in isolated trees which were part of former forests. Carnaby's cockatoo are known to nest in hollows of dead or alive salmon gums, wandoo, tuart, jarrah, flooded gum, York gum, karri, marri and powderbark. Forest red-tailed cockatoos also breed within forests, woodlands or isolated trees that may have been part of a former woodland/forest and may include the following tree species; marri, karri, wandoo, bullock, blackbutt, tuart and jarrah. A small number of marri trees were observed in the application area which provide a small amount of foraging habitat. Forest red-tailed black cockatoos were observed foraging within the vegetation to the east of the application area.

Other fauna recorded within the local area includes the quenda, Perth slider, southern death adder, Swan Coastal Plain shield-backed trapdoor spider, Dell's skink, and black-striped snake, all of which are listed as priority species by DBCA. A site inspection did not observe signs of these species. Diggings within the application area were consistent with those of rabbits and a fox was sighted in the neighbouring property.

A number of threatened and priority flora species have been recorded within the local area within the same mapped soil and vegetation types as the application area. During a site inspection, several patches of remanent vegetation in good (Keighery 1994) condition were observed in the north-eastern corner of the application area. However, the remainder of the application area was observed to contain an understory comprised mostly of weed species and evidence of historical disturbance of grazing and a fire. Therefore, it was considered unlikely that the application area supports habitat for any of the threatened or priority species.

Although remanent vegetation cover in the local area is below national objectives and targets for biodiversity conservation in Australia (Commonwealth of Australia 2001), the site inspection determined the application area is not locally significant, as the vegetation was in a Degraded (Keighery 1994) to Completely Degraded (Keighery 1994) condition. The application area had experienced significant disturbance in most parts due to possible historical grazing and fire. Multiple tree deaths were observed specifically within the northern extent and understory vegetation was sparse with a high weed burden.

The proposed clearing forms part of a Perth Reginal Ecological linkage, linking Jandakot reginal park 2.3 kilometres to the north and 0.84 kilometres west, to a mosaic of remanent vegetation blocks and Bush Forever sites adjoining the southern portion of the application area. Given that the proposed clearing will not include all the vegetation within the block and the site inspection identified a 10-hectare patch of remanent native vegetation in good (Keighery, 1994) to very good (Keighery 1994) condition adjoining the east portion of the application area, it is unlikely the above ecological linkage function will be impacted. Also, cumulative impacts to habitat loss will be minimal, due to factors outlined above and the largest remnants of native vegetation in the local area are within Bush Forever or reginal park sites including, Jandakot and Beelia.

Conclusion

Based on the above assessment, the proposed clearing will result in loss of foraging habitat and future roosting trees for black cockatoo species. No tracks, scats or signs of other fauna species recorded in the local area were observed during the site inspection. Due to the degraded condition of the application area, it is unlikely the proposed clearing will impact threatened or priority flora species recorded in the local area. The ecological function of the Perth reginal linkage will not be affected. The proposed clearing could result in the spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

3.2.2. Land and water resources – (Clearing Principles f, g, and i)

Assessment

A site visit was conducted by representatives of the CSLC on 11 November 2020 to assess land degradation impacts of the proposed clearing as applied for under CPS 9086/1. In summary, the CSLC identified that the assessed soils have a risk of eutrophication from extreme to very high and the risk of eutrophication causing land degradation is very high.

The report also noted that parts of the application area may be subject to periodic waterlogging and the proposed clearing would maintain the risk level of high to very high. Furthermore, it was noted the risk of waterlogging causing appreciable land degradation is high to very high. The abovementioned risks are likely to remain high if the area is cleared of all vegetation (CSLC, 2020).

The Bassendean Sand type is highly transmissive and as such, presents a high nutrient export risk and is generally not suitable for conventional inground vegetable growing (DWER, 2020b).

The majority of the application area is within a mapped multiple use wetland, the Armadale Palusplain (Unique feature ID 15797). Multiple use category wetlands have few remaining important attributes and functions and the protection of these wetlands is the lowest priority. A 13.49-hectare conservation category wetland is located approximately 65 meters to the east of the application area and three smaller conservation category wetlands to the southeast, south and west of the application area. Photographs provided by the applicant and by DPIRD confirm the presence of Melaleuca and Kunzea species, which are known to grow in association with wetland environments. Given this, the proposed clearing is at variance to principle (f). However, noting the application area is in a good to degraded (Keighery, 1994) condition, no significant impacts to the environmental values of the multiple use wetland are expected.

The presence of a wetland over the majority of the application area indicates the proposed clearing may increase sedimentation within the wetland seasonally. Given the wetland system is likely to be hydrologically connected to the extensive systems to the north and south of the application area, the proposed clearing is likely to impact on surface water quality and alter the hydrology of surrounding wetlands.

Conclusion

Based on the information above, the proposed clearing is considered likely to cause appreciable land degradation in the form of waterlogging and eutrophication and may impact the surface water quality and hydrology of the surrounding wetlands. As such, a request for further information inviting the applicant to address the impacts of land degradation and to detail the proposed purpose of clearing was conducted. The applicant did not provide sufficient detail to mitigate the impacts of land degradation.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Development approval under the *Planning and Development Act 2005* (issued by the Shire of Serpentine Jarrahdale) may be required under Clause 7.12.4 under Town Planning Scheme No. 2 if any trees with a height greater than four meters or a diameter greater than 150 millimetres at a height of 1.2 meters is cleared.
- If the final land use is horticulture, Local Planning Policy 4.12 (LPP 4.12) may apply.
- The application area is subject to State Planning Policy 2.1 - Peel-Harvey coastal plain catchment which should be considered by the local government for any change of land use proposed.
- Licence to abstract water under the *Rights in Water and Irrigation Act 1914*. Advice received noted the Groundwater licence for this property was renewed until 14 March 2031.

The Shire of Serpentine Jarrahdale advised DWER that local government approvals may be required, and that the proposed clearing for agriculture is consistent with the Shire's Local Planning Scheme. However, the Shire registered a numbered of comments about the proposed clearing, namely;

- No species list was included with the application;
- The application area is mapped as being a Banksia woodland TEC;
- The vegetation has been identified by the Shire as a potentially local significant natural area and is part of a regional ecological linkage (number 60); and
- The vegetation is within a buffer of a conservation category wetland and is within a multiple use wetland.

No Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Details of public submissions

Summary of comments	Consideration of comment
A survey for black cockatoo breeding habitat and foraging habitat should be undertaken	The application area contains a small number of marri trees which were not observed to contain hollows but may provide a small amount of foraging habitat for Carnaby's cockatoo and Forest red-tailed black cockatoo (DWER, 2021).
A number of roost sites are in close proximity to the area proposed to be cleared which highlights the importance of foraging habitat	Available databases note there are 30 records of black cockatoo roost sites within the local area.
Consideration of cumulative impacts to habitat loss should be given	As the application area is comprised of vegetation in degraded to Completely Degraded (Keighery 1994) condition, it is considered to have limited habitat value for fauna or flora. Also, largest remnants of native vegetation are with the local area are in Bush Forever or reginal park sites including, Jandakot and Beelia. It is considered there is not going to be a significant impact to habitat.
Need for mitigation measures that are effective for black cockatoo conservation.	Noting that no breeding trees were identified within the application area and only a small amount of foraging habitat, no mitigation measures were required.

Appendix B. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of a 33-hectare isolated patch of native vegetation in the intensive land use zone of Western Australia. It is adjacent to other rural land holdings some of which retain native vegetation which comprises the larger patch. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 20 per cent of the original native vegetation cover.
Ecological linkage	The area proposed to be cleared is within the Perth Regional Ecological linkage number 60.
Conservation areas	The area proposed to be cleared is within one kilometres of Modong Nature Reserve and DBCA managed Crown land.
Vegetation description	Photographs supplied by CSLC (2020) indicate the vegetation within the proposed clearing area consists of Melaleuca and Kunzea species over a mixed understory of native and non-native grasses and Carpobrotus species. This was confirmed by a site visit undertaken by DWER staff on 26 May 2021. Representative photos are available in Appendix E. The vegetation within the application area includes some remanent components of the mapped vegetation type: • Bassendean Complex- Central and South, which is described as Vegetation ranges from woodland of *Eucalyptus marginata* (Jarrah) - *Allocasuarina*

Characteristic	Details
	fraseriana (Sheoak) - *Banksia* species to low woodland of *Melaleuca* species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* (Jarrah) to *Eucalyptus todtiana* (Pricklybark) in the vicinity of Perth. The mapped vegetation type retains approximately 26.8 per cent of the original extent *(Government of Western Australia, 2019).*
Vegetation condition	Photographs provided by the DWER site inspection indicate the vegetation within the proposed clearing area is in good to degraded (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.
Climate and landform	The property is situated near the 900 millimetre rainfall isohyet and occupies the lower slope positions in the landscape (CSLC, 2020).
Soil description	The soil is mapped as the Bassendean B6 Phase and the Bassendean B4 Phase described below: • Bassendean B6 Phase: Sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands. • Bassendean B4 Phase: Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan. Soil described according to (Schoknecht, N 2004)
Land degradation risk	The Bassendean B6 phase has a high risk of subsoil acidification, water logging and phosphorus export risk but lower risk for other forms of land degradation. The Bassendean B4 phase has a high risk of subsoil acidification, water logging and phosphorus export risk but lower risk for other forms of land degradation.
Waterbodies	The desktop assessment and aerial imagery indicated that the application area is within a mapped multiple use wetland, the Armadale Palusplain.
Hydrogeography	The application area is within the Serpentine groundwater area as proclaimed under the *Rights in Water and Irrigation act 1914*. The area is mapped as having groundwater total dissolved solids as 500-1000 milligrams per litre.
Flora	According to available databases, there are records of 39 species of conservation significant flora within the local area. The nearest record is a Priority 3 (P3) species *Jacksonia gracillima*.
Ecological communities	The application area is mapped as being the Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region and is listed as Endangered under the EPBC Act and as a Priority 4 ecological community by DBCA.
Fauna	Sixteen fauna species have been recorded within the local area, nearest record is 230 meters away (a Carnaby's Cockatoo).

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex					
Bassendean Complex- Central and South	87,476.26	23,508.66	26.87	4,377.36	5
Local area			20.2		

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), 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 lasiocarpa var. *bracteolata* long peduncle variant (G.J. Keighery 5026)	1	Y	Y	Y	4.9	6	N/A
Acacia oncinophylla subsp. *patulifolia*	4	N	N	N	9.4	1	N/A
Amanita fibrillopes	3	Y	Y	Y	9.8	27	N/A
Angianthus drummondii	3	Y	Y	Y	7.8	19	N/A
Aponogeton hexatepalus	4	Y	Y	Y	7.0	30	N/A
Babingtonia urbana	3	Y	Y	Y	3.8	26	N/A
Banksia kippistiana var. *paenepeccata*	3	N	N	N	9.4	28	N/A
Boronia juncea subsp. juncea	1	N	N	N	5.4	12	N/A
Calectasia grandiflora	2	Y	Y	Y	8.0	9	N/A
Cyathochaeta teretifolia	3	Y	Y	Y	5.4	39	N/A
Dillwynia dillwynioides	3	Y	Y	Y	9.9	40	N/A
Diuris micrantha	T	Y	Y	Y	6.3	8	N/A
Diuris purdiei	T	Y	Y	Y	1.7	26	N/A
Dodonaea hackettiana	4	N	N	N	9.2	30	N/A
Drakaea elastica	T	Y	Y	Y	5.5	19	N/A
Drakaea micrantha	T	Y	Y	Y	8.4	49	N/A
Jacksonia gracillima	3	Y	Y	Y	1.2	29	N/A
Johnsonia pubescens subsp. *cygnorum*	2	Y	Y	Y	7.7	12	N/A

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]
Kennedia beckxiana	4	N	N	N	8.8	26	N/A
Lepidosperma rostratum	T	Y	Y	N	7.9	34	N/A
Meionectes tenuifolia	3	Y	Y	Y	8.1	25	N/A
Ornduffia submersa	4	N	Y	Y	8.2	61	N/A
Schoenus capillifolius	3	Y	Y	N	7.8	27	N/A
Stylidium aceratum	3	Y	Y	Y	7.7	26	N/A
Synaphea sp. Pinjarra Plain (A.S. George 17182)	T	N	N	Y	7.5	63	N/A
Tetraria australiensis	T	N	N	N	7.5	38	N/A
Tripterococcus sp. Brachylobus (A.S. George 14234)	4	Y	N	N	9.2	27	N/A
Verticordia lindleyi subsp. *lindleyi*	4	Y	Y	Y	3.8	82	N/A

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

B.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]
Calyptorhynchus latirostris (Carnaby's cockatoo)	EN	Y	Y	0.3	20925	N/A
Falco peregrinus (Peregrine falcon)	OS	Y	Y	0.9	1787	N/A
Phascogale tapoatafa wambenger (south-western brush-tailed phascogale)	CD	Y	Y	4.4	1796	N/A
Isoodon fusciventer (southwestern brown bandicoot)	P4	Y	Y	4.3	9504	N/A
Lerista lineata (Perth slider)	P3	Y	Y	4.7	423	N/A
Neelaps calonotos (Black-striped snake)	P3	Y	Y	4.7	228	N/A
Acanthophis antarcticus (southern death adder)	P3	Y	Y	7.9	166	N/A
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	Y	Y	8.1	3361	N/A
Calyptorhynchus baudinii (Baudins cockatoo)	EN	Y	Y	8.1	4077	N/A
Synemon gratiosa (graceful sunmoth)	P4	Y	N	2.8	842	N/A
Idiosoma sigillatum (Swan Coastal Plain shield-backed trapdoor spider)	P3	Y	N	7.6	276	N/A
Neopasiphae simplicior (short-tongue bee)	EN	Y	N	8.1	12	N/A
Leioproctus contrarius (short-tongue bee)	P4	Y	N	8.9	11	N/A
Leioproctus douglasiellus (short-tongue bee)	EN	Y	N	8.1	7	N/A
Ctenotus delli (Dells skink)	P4	Y		8.6	109	N/A
Idiosoma sp. (Idiosoma trapdoor spider)	EN	Y	N	9.2	26	N/A

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

B.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]
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	EN	Y	Y	0		N	N

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

B.6. Land degradation risk table

Risk categories	***Bassendean 4***
Wind erosion	10-30% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	>70% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk

Risk categories	***Bassendean 6***
Wind erosion	>70% of map unit has a high to extreme wind erosion risk
Water erosion	<3% of map unit has a high to extreme water erosion risk
Salinity	<3% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk
Water logging	30-50% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	>70% of map unit has a high to extreme phosphorus export risk

Appendix C. 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: Majority of the application area is mapped as 'Banksia Woodlands of the Swan Coastal Plain; Threatened Ecological Community (TEC). A site inspection confirmed the vegetation within the application area is not representative of this community or the mapped vegetation type and unlikely to provide habitat for threatened or priority 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: An inspection of the application area noted the understory was weedy and slightly dense with some large melaleuca trees and occasional marri trees. The application area is not likely to comprise a significant habitat for ground dwelling fauna. The application area includes some Black cockatoo foraging habitat.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: A site inspection confirmed the application area is comprised of very few species and includes a high number of weeds. Due to the evidence of historical disturbance and an abundance of weeds, it is considered the application area does not provide habitat for threatened flora.	Not 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: The area proposed to be cleared contains a minor quantity of banksia species but a site visit confirmed the application area is not representative of the Banksia Woodlands of the Swan Coastal Plain TEC. The area proposed to be cleared does not contain species that indicate a TEC.	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: The extent of the mapped vegetation type and the native vegetation in the local area is less than the national objectives and targets for biodiversity conservation in Australia for the Perth metropolitan area.	May be at variance	Yes *Refer to Section 3.2.1, above.*
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:	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas. The application area is adjacent to remnant vegetation which may be in similar or better condition, the proposed clearing may impact on the environmental values of the adjacent vegetation.		
Environmental value: land and water resources		
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 is growing in association with a mapped palusplain wetland, and noting the species identified during the site inspection, the proposed clearing is within an environment associated with a wetland and may impact on- or off-site hydrology and water quality.	At variance	Yes *Refer to Section 3.2.2, above.*
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The land degradation assessment carried out by DPIRD has noted the land in which the clearing is proposed to occur has a high risk of land degradation.	At variance	Yes *Refer to Section 3.2.2, above.*
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: Given the application area is within a multiple use wetland and within the buffer of a conservation category wetland, the proposed clearing may impact surface and ground water quality.	May be at variance	Yes *Refer to Section 3.2.2, above.*
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 mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to the increased incidence or intensity of flooding.	Not likely to be at variance	No.

Appendix D. Vegetation condition rating scale

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

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

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

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E. Photographs From Site Inspection

Figure 2 Map showing locations of photographs taken during the site inspection (DWER 2021). Example photographs area present below

Figure 3 Photo 1

Figure 4 Photo 2

Figure 5 Photo 4

Figure 6 Photo 5

Figure 7 Photo 5

Figure 8 Photo 8

Figure 9 Photo 9

Figure 10 Photo 92

Figure 11 Photo 88

Figure 12 Photo 89

Figure 13 Photo 79

Figure 14 Photo 74

Figure 15 Photo 72

Figure 16 Photo 70

Figure 17 Photo 69

Appendix F. Sources of information

F.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)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- 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)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- 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
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- 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)

F.2. References

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