



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9774/1
Permit type:	Area permit
Applicant name:	Mr Bruce Crabb
Application received:	15 June 2022
Application area:	42.6 hectares of native vegetation
Purpose of clearing:	Incidental removal of regrowth within plantation harvesting and final land use of pasture.
Method of clearing:	Mechanical
Property:	Lot 1425 on Deposited Plan 202471
Location (LGA area/s):	Shire of Denmark
Localities (suburb/s):	Peaceful Bay

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 selectively clear native vegetation that has regrown within the blue gum (likely to be *Eucalyptus globulus*) plantation at the property since 1995. The blue gum is intended to be harvested and through the harvesting process, the regrowth of native vegetation would be cleared. The final land use is to be a cleared paddock/pasture.

1.3. Decision on application

Decision:	Refused
Decision date:	5 October 2023
Decision area:	42.6 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 no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), photographs of the vegetation provided by the applicant (see Appendix D), a site visit, an assessment report and advice provided by the Commissioner for Soil and Land Conservation (CSLC) (CSLC, 2022), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing:

- Will result in appreciable land degradation in the form of waterlogging, inundation, phosphorus export and wind erosion given the soils present within the application area.
- Will result in clearing of riparian vegetation growing in association with a watercourse or wetland;
- May cause the deterioration of surface water quality of nearby watercourses, areas of inundation and wetlands within and adjacent to the application area, through sedimentation and turbidity;
- May impact an informal ecological linkage between the vegetated area to the east and the west of the application area, including Walpole – Noralup National Park and a registered flora road, which facilitates fauna movement across the landscape;
- Will impact vegetation that may contain suitable habitat for a number of threatened and priority flora species; and
- Will impact vegetation that may contain suitable habitat for *Bettongia penicillata ogilbyi* (woylie) (CR), *Dasyurus geoffroii* (chuditch) (VU), *Geocrinia lutea* (Nornalup frog) (P4), *Hydromys chrysogaster* (water-rat) (P4), *Notamacropus eugenii derbianus* (tammar wallaby) (P4), *Notamacropus irma* (western brush wallaby); and *Setonix brachyurus* (quokka) (VU).

After consideration of the available information, the Delegated Officer concluded that the proposed clearing was likely to lead to significant impacts to the environment and that in the absence of further minimisation and mitigation measures to reduce the impacts of the proposed clearing (see Section 3.1), as well as further clarifying information to determine the environmental values present within the area, which was requested from the applicant but not provided, it was not possible to have confidence that these impacts could be mitigated and managed to an acceptable level. The Delegated Officer notes that the applicant was provided with multiple opportunities to provide the required information, however, the requested information has not been provided.

Noting this, and having had regard to the precautionary principle, the Delegated Officer determined the proposed clearing is likely to lead to appreciable land degradation in the form of waterlogging, soil erosion and eutrophication, impact riparian vegetation, may have unacceptable impacts to an ecological linkage between a Shire of Denmark Flora Road and the Walpole-Nornalup National Park, and may impact significant habitat for threatened flora and fauna species.

In addition, the Delegated Officer also took into consideration the assessment findings that the soils present within the application area have a low or very low capacity for the intended end land use of pasture and grazing and took into consideration the document '*A guide to the assessment of applications to clear native vegetation*' (DER, 2013), which states that, generally, land that has low or very low capability for its intended use should not be cleared.

Given the above, the Delegated Officer decided to refuse to grant a clearing permit.

1.5. Site map

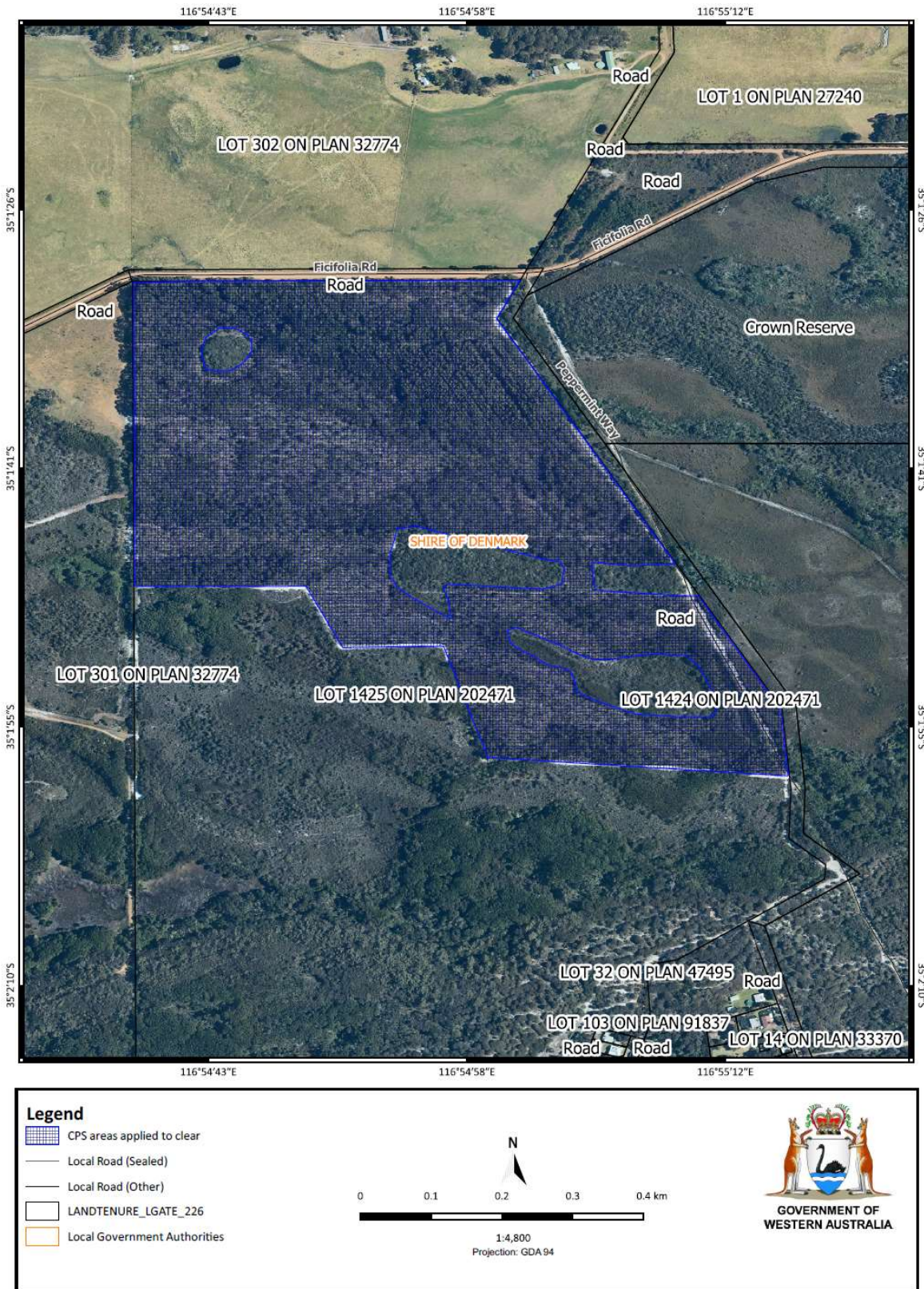


Figure 1 Map of the application area
The area crosshatched blue indicates the application area.

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

Evidence was submitted by the applicant, demonstrating the following:

- The clearing footprint is inclusive of the blue gum plantation and the native vegetation that has emerged between the planting.
- Pockets of remnant vegetation within the plantation will be retained.
- No alternatives exist as the blue gum is due for harvest and this process will remove the native vegetation regrowth that has occurred between plantings.

Further information was requested from the applicant in October 2022 and August 2023, regarding management, avoidance and mitigation measures to reduce land degradation impacts (waterlogging, soil erosion, eutrophication of surface water), impacts to an ecological linkage, conservation significant flora and fauna habitat and wetland dependent vegetation.

To date, this information has not been provided. Given this, the Delegated Officer is not satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (see Appendix B) identified that the impacts of the proposed clearing present a risk to the biological values of fauna, flora and adjacent vegetation, ecological linkages, land degradation and conservation areas. 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 - Clearing Principles (a), (b), and (c)

Assessment

The assessment of biological values below recognises that the application has previously been cleared in 1995 for the purpose of a blue gum plantation, however photographs obtained from the applicant and observations made during a site inspection by officers from the office of the Commissioner for Soil and Land Conservation (CSLC), undertaken in September 2022, identified that a diverse understory of various native shrubs and vegetation has regenerated and in some areas competes vigorously with the plantation.

The CSLC site inspection identified that the application area is dominated by sand rises interspersed with swampy depressions and wetlands and the condition of the plantation vegetation is highly variable, with some areas having a dense and healthy understory and a midstory of native vegetation. The deep sand slopes and rises, however, appear to have much poorer growth from both native vegetation and blue gums (CSLC, 2022).

Flora

According to available databases, the following conservation significant flora species have been recorded within the same mapped soil and vegetation type as the application area. Consideration is given to the observations of a site inspection (CSLC, 2022) that noted while the application area is within the Blackwater podzols phase, the site consists of peaty swamps in the depressions with deep sandy soils on the rise.

- *Andersonia auriculata* (Priority 3) – This species is known from 16 recordings within the local area within the same mapped soil and vegetation types as the application area.
- *Banksia sessilis* var. *cordata* (Priority 4) – This species is known from one record within the local area within the same mapped soil and vegetation types as the application area.
- *Caladenia applanata* subsp. *erubescens* (Priority 2) - This species is known from one record within the local area within the same mapped soil and vegetation types as the application area.
- *Caladenia evanescens* (Priority 1)- This species is known from one record within the local area within the same mapped soil and vegetation types as the application area.
- *Cyathochaeta stipoides* (Priority 3) This species is known from two records within the local area within the same mapped soil and vegetation types as the application area
- *Pleurophascum occidentale* (Priority 4) This species is known from two records within the local area within the same mapped soil and vegetation types as the application area
- *Styidium leeuwinense* (Priority 4) – this species has been recorded three times within the local area, with one record on the same soil.

Conclusion

Based on the above assessment, the proposed clearing may result in impacts to priority flora species. An appropriately timed flora survey is required to determine the presence or absence of suitable habitat for the conservation significant flora species listed above.

Fauna

According to available databases, 55 conservation significant fauna species have been recorded within the local area, four of these are marine species and have been excluded from consideration in this assessment. It is noted that the application area has been previously cleared for a plantation but a significant amount of regrowth that has occurred within the plantation within application area, it is considered to be suitable to provide habitat for a range of fauna species.

While no wetlands have been mapped within the available databases, the site inspection conducted by the office of the CSLC noted the application area contained swampy depressions and wetlands.

It is considered that the application area may provide habitat for the following species based on the dense understory, the relevance of fauna records and the habitat preferences of the species. Further discussion is provided below:

- *Bettongia penicillata ogilbyi* (woylie) (CR) Available information suggests the species are now only found in two locations: Upper Warren and Dryandra Woodlands however a small number of local records and noting the species can have relatively large home ranges (Threatened Species Scientific Committee, 2018), suggests that populations may exist outside of the two locations.
- *Dasyurus geoffroyi* (chuditch) (VU) The chuditch now has a patchy distribution throughout the Jarrah forest and mixed Karri/Marri/Jarrah forest of south-west Western Australia, Chuditch are known to have occupied a wide range of habitats from woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. (DEC, 2012) The closest record from the application area is approximately 4.6 kilometres. The application area has the potential to provide habitat to the species noting the variety of habitats the species has been recorded in and due to the proximity to extensive remnants on three sides of the application area.
- *Falco peregrinus* (Peregrine falcon) (OS) – The species has a large range of habitat and is sometimes found in cities. Breeding habitat ranges from recesses in cliff faces, tree hollows or in abandoned nests of other birds (Birdlife Australia, 2022). The application area is not likely to provide significant habitat for the species given the previous clearing activities.
- *Geocrinia lutea* (Nornalup frog) (P4) has habitat preferences of very dense swamp vegetation (to 4 m high) on peaty sand, bordering streams and seeps and often on the edge of a forest. (Western Australian Museum

2013). Noting the observations from of a site inspection (Commissioner of Soil and Land Conservation (CSLC), 2022) observing the presence of peaty swamps, suitable habitat for the species may occur within the application area.

- *Hydromys chrysogaster* (water-rat) (P4) lives in burrows on low banks of rivers, lakes, wetlands, estuaries and even along the coast. Intact riparian vegetation and associated bank stability is critical to their survival.(DWER 2022). Noting the observations from of a site inspection (Commissioner of Soil and Land Conservation (CSLC), 2022) observing the presence of peaty swamps, suitable habitat for the species may occur within the application area.
- *Isoodon fusciventer* (quenda) (P4) In their natural habitat, they live in dense understorey such as around swamps or in banksia and jarrah woodlands. Department of Biodiversity, Conservation and Attractions. (2017). The application area appears to have a dense understory and peaty swamps so is considered likely to provide habitat for this species.
- *Notamacropus eugenii derbianus* (tammar wallaby) (P4) and *Notamacropus irma* (western brush wallaby). The habitat preferences of these species are not well documented. Given the presence of records within the local area of both species and the linkage values of the application area to the larger remnants, it is considered the application area may provide habitat for these species even if only for the purpose of supporting movement.
- *Pseudocheirus occidentalis* (western ringtail possum) (CR) The western ringtail possum is a highly arboreal possum, spending most of its time feeding, resting and socialising high in the forest canopy. Historically, the western ringtail possum was commonly found throughout the forests of the south west of Western Australia. Populations are now limited to three areas, with the largest one near the town of Busselton (Department of the Environment and Water Resources, 2007). A review of records within the local area shows dates of more than 20 years ago and no recent records. Given this and the lack of peppermint trees or other preferred species within the canopy, the species is not considered to occur within the application area.
- *Setonix brachyurus* (quokka) (VU) The quokka is known from mainland populations with the application area being within the southern forest subpopulation. The mainland population is within high rainfall areas including areas of jarrah, marri and karri forest that generally have a thick understory and area close to water sources (Department of Biodiversity, Conservation and Attractions, 2017). It is considered that the application area may provide habitat for the species.
- *Zephyrarchaea mainae* (Main's assassin spider) (VU) is known from the greater Albany region of southern Western Australia, from Walpole-Nornalup National Park (near Walpole) east to Bremer Bay and north to the Porongurup National Park, with a range centred on the Torndirrup Peninsula south of Albany. Specimens have been collected by beating and sifting sedges (*Lepidosperma* sp.), curly grass (*Empodisma gracillimum*) and low shrubs in dense coastal or near-coastal groves of Peppermint (*Agonis* sp.), with several outlying populations also known from wet Karri (*Eucalyptus diversicolor*) forest (Rix and Harvey, 2012). Noting the species hasn't been recorded in previously disturbed areas and is likely to have limited ability for redistribution after disturbance, it is considered the species is unlikely to occur within the application area given the small pockets of remnant vegetation within the property are proposed to be retained.

Conclusion

Based on the above assessment, the proposed clearing may impact on significant habitat for:

- *Bettongia penicillata ogilbyi* (woylie) (CR)
- *Dasyurus geoffroii* (chuditch) (VU)
- *Geocrinia lutea* (Nornalup frog) (P4)
- *Hydromys chrysogaster* (Water-rat) (P4)
- *Notamacropus eugenii derbianus* (tammar wallaby) (P4)
- *Notamacropus irma* (western brush wallaby); and
- *Setonix brachyurus* (quokka) (VU)

A fauna survey is required to determine the presence or absence of suitable habitat for these conservation significant fauna species.

3.2.2. Significant remnant vegetation and conservation areas - Clearing Principles (e), and (h)

Assessment

The application area lies between parcels of the Walpole-Nornalup National Park and is adjacent to part of the park on one side. Noting this, the application area is likely to provide ecological linkage values for species within the area in an east-west direction.

The proposed clearing has the potential to introduce weeds and dieback to adjacent vegetation including parts of the National Park which is located 30 metres to the east of the northern portion of the application area. In addition, the proposed clearing is likely to reduce the linkages between areas of native vegetation to the east and west.

Additionally, advice received from the Shire of Denmark notes the area proposed to be cleared abuts a designated Flora Road (Ficifolia Road) which is described as a flora road of high conservation value. The Shire referenced its own Shire Flora Road Management Plan (2012) noting that within this document the Shire educates and involves adjoining landholders in the protection of the Flora Road and that the Shire should encourage individual and community restoration and revegetation projects with special emphasis on enhancing wildlife corridors (Shire of Denmark, 2022)

Further information was requested from the applicant regarding additional efforts that can be taken to avoid or mitigate significant environmental impacts of the proposed clearing to ecological linkages and areas of conservation significance. To date, no further information has been provided by the applicant regarding how this impact may be managed, avoided or minimised.

Conclusion

Based on the above assessment, the proposed clearing may result in the degradation of the biological values of Ficifolia road, the adjacent National Park and impact on local ecological linkages.

3.2.3. Land and water resources - Clearing Principles (f), (g), (i) and (j)

Assessment

Advice was sought from the Commissioner of Soil and Land Conservation (CSLC) on the potential land degradation impacts from the proposed clearing. A representative of the Commissioner undertook an inspection of the location in September 2022 and noted the following:

- Observations of the site and surrounding landscapes indicate peaty swamps in the depressions with deep sandy soils on the rise. These are likely prone to several potential risks including phosphorus export risk, waterlogging and inundation risk, wind erosion and subsurface acidification.
- The proposed clearing includes significant areas of what appear to be pale, deep sands that could potentially have poor phosphorous buffering indexes (PBI). This would make them susceptible to a high risk of phosphorous leaching and loss. This is supported by the Land Quality mapping that indicates 64% of the map units have a high to extreme risk of phosphorous loss. This risk is exacerbated by the high rainfall and the proximity of the proposed clearing to several wetlands to the east in a DBCA reserve. It is 3.6km from the Irwin Inlet, though it is uncertain if surface or subsurface flows would reach the estuary.
- The depression and lower flats are likely prone to waterlogging and inundation on the property. However, the offsite impacts of this potential risk are mitigated by the proposed clearing bound by vegetation on three sides (CSLC, 2022).

The CSLC determined that based on the findings of the site inspection, the proposed clearing is considered likely to cause appreciable land degradation in the form of eutrophication, wind erosion and waterlogging (CSLC, 2022).

In addition to the above, there are mapped watercourses within the application area which are described as minor non-perennial. Two of the three mapped watercourse flow into wetlands on adjacent properties and one flows into an area subject to inundation (within a pocket of native vegetation surrounded by the application area but not within). The proposed clearing is likely to deteriorate the surface water quality of this area through sedimentation and turbidity.

Further information was requested from the applicant as to how the above land degradation risks and risks to surface water quality, resulting from the proposed clearing, are to be managed or minimised. A protective buffer of 30 metres or greater to watercourses was recommended.

To date, no further information has been provided by the applicant regarding how land degradation, waterlogging and surface water impacts, as well as impacts to riparian vegetation and mapped watercourses will be managed, avoided or minimised.

Conclusion

Based on the above assessment, it is considered for the proposed clearing to result in:

- Appreciable land degradation risk of phosphorus export risk, waterlogging and inundation risk, wind erosion and eutrophication.
- Direct impact and removal of riparian vegetation growing in association with a watercourse or wetland.
- Degradation of surface water quality of nearby watercourses and areas of inundation.

3.3. Relevant planning instruments and other matters

The Shire of Denmark advised that an approval for a 35-hectare blue gum plantation was given in 1995 but noted that at the time there were no conditions and since then industry guidelines had become available. The Shire also advised that the plantation does not appear to have been managed appropriately and native vegetation has grown within the plantation. The Shire noted the property is surrounded by low-lying wetlands and bushland which would be impacted if the property was cleared (Shire of Denmark, 2022).

Furthermore, the Shire has advised the proposed clearing abuts one of the four designated Flora roads within the Shire; Ficafolia Road. The Shire's *Flora Road Management Plan (2012)* states under section 7.2: "*That the Shire educates and involves adjoining landholders in the protection of the Flora Road and under section 7.3 'That the Shire should encourage individual and community restoration and revegetation projects with special emphasis on enhancing wildlife corridors.'*" (Shire of Denmark, 2022).

The Shire identified flora and fauna values of the area including ecological linkage values (Shire of Denmark, 2022), which are addressed within the assessment above.

The Shire concluded that there was no objection to the clearing of the blue gum plantation but it was unlikely that a future approval for plantation would be provided. The Shire noted preference for clearing methods that reduce damage to the regrowth of native understory and any large roosting trees, and that appropriate buffers are maintained around riparian zones. The Shire noted that should a clearing permit be issued then conditions of revegetation to allow for wildlife corridors linking remnants (the Flora Rd and to the National Park) be established and measures to protect the vegetation within Ficafolia road (a Shire Flora road), provided (Shire of Denmark, 2022).

The application area is zoned rural under the Shire of Denmark's Town Planning Scheme.

No Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the relevant legislation and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of an expansive tract of native vegetation in the intensive land use zone of Western Australia. It is adjacent to large remnants of native vegetation. Part of the Walpole-Nornalup National Park is located to the east of the application area. The proposed clearing area contributes to an important linkage between vegetated parcels of land.</p> <p>Spatial data indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains > 50 per cent of the original native vegetation cover.</p>
Ecological linkage	<p>The application area is not within any mapped linkages but is surrounded by native vegetation on three sides and contributes to an informal linkage between a registered Flora Road, to the north, and the Walpole-Nornalup National Park, to the east.</p>
Conservation areas	<p>The application area is within 30 meters, to the west, of the Walpole-Nornalup National Park.</p>
Vegetation description	<p>Photographs supplied by the applicant indicate the vegetation within the proposed clearing area consists of a regrowth of <i>Melaleuca</i>, sedges and <i>Pteridium</i> species between planted blue gums. Representative photos are available in Appendix D.</p> <p>This is consistent with the mapped vegetation type(s):</p> <ul style="list-style-type: none"> Blackwater vegetation complex which is described as; Mosaic of low open woodland of <i>Melaleuca preissiana</i>, low open woodland of <i>Melaleuca cuticularis</i>, open heath of Myrtaceae-Proteaceae spp. and sedgelands of <i>Restionaceae</i> spp. on low lying flats in hyperhumid and perhumid zones. <p>The mapped vegetation type retains approximately 84 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Photographs provided by the applicant indicate the vegetation within the proposed clearing area is in degraded (Keighery, 1994) condition, described as: basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photos are available in Appendix D.</p>
Climate and landform	<p>The application area is between 15 and 20 meters above sea level according to Australian Height Datum.</p>
Soil description	<p>The soil is mapped as Blackwater podzols Phase which is described as Humus podzols on plains; Kg sedgelands, Tt heath. Peat in swamps; wattle thickets. Podzols on dunes; banksia woodland.</p>
Land degradation risk	<p>The mapped soil type has a low risk of water erosion and salinity, a medium risk of wind erosion and phosphorus export risk and a high risk of subsurface acidification and waterlogging. However, advise from CSLC based on the findings of a site inspection note the soils within the application area has a high to extreme phosphorus export risk, moderate to very high waterlogging and inundation risk, high to extreme wind erosion risk and high susceptibility for subsurface acidification (CSLC, 2022).</p>
Waterbodies	<p>The desktop assessment and aerial imagery indicated that the application area is 157 meters from a conservation category wetland and three minor non-perennial watercourses occur within the application area. In addition, a small section of the application area surrounds an area of inundation associated with one of these watercourses. No buffer is provided to this area.</p>

Characteristic	Details
Hydrogeography	The mapped groundwater salinity is 0-1000 milligrams per litre total dissolved solids which is considered fresh.
Flora	According to available databases, 62 conservation significant flora species have been recorded within the local area.
Ecological communities	Four conservation ecological communities are located within the local area, with each being recorded once. One of the communities is listed as a Federally listed ecological community and a state listed Priority Ecological Community, Subtropical and Temperate Coastal Saltmarsh. This community is the closest mapped occurrence to the application area and is located approximately three kilometres to the northeast of the application area.
Fauna	According to available databases, 54 conservation significant fauna species are recorded within the local area. The closest recording of conservation significant fauna is a cluster of 11 species which is mapped within the application area. The cluster mostly comprises of migratory bird species and the accuracy of the record indicates it is more likely to be within the coastal environment nearby.

A.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*					
Warren	833,985.56	659,432.21	79.07	558,485.38	66.97
Vegetation complex					
Blackwater **	33,366.66	28,260.20	84.70	25,733.73	77.12
Local area					
20 km radius			>50	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

A.3. Flora analysis table

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

Species name	Conservation status	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]
<i>Acacia euthyphylla</i>	3	N	N	9.56	28	N/A
<i>Actinotus repens</i>	3	N	N	15.83	33	N/A
<i>Adelphacme minima</i>	3	N	N	9.59	19	N/A
<i>Alexgeorgea ganopoda</i>	3	N	N	6.65	32	N/A
<i>Amanita kalamundae</i>	3	N	N	6.95	22	N/A

Species name	Conser vation status	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]
<i>Amanita walpolei</i>	2	N	N	12.52	7	N/A
<i>Andersonia auriculata</i>	3	Y	Y	0.162	101	N
<i>Andersonia redolens</i>	2	N	N	8.61	13	N/A
<i>Andersonia</i> sp. Amabile (N. Gibson & M. Lyons 355)	3	N	N	3.31	22	N/A
<i>Anthocercis sylvicola</i>	3	N	N	9.56	5	N/A
<i>Banksia serra</i>	4	N	N	9.60	12	N/A
<i>Banksia sessilis</i> var. <i>cordata</i>	4	Y	Y	0.09	7	N
<i>Banksia verticillata</i>	T	N	N	14.02	2	N/A
<i>Boronia crassipes</i>	3	N	N	12.89	1	N/A
<i>Boronia virgata</i>	4	N	N	2.67	11	N/A
<i>Caladenia abbreviata</i>	3	N	N	0.59	1	N/A
<i>Caladenia applanata</i> subsp. <i>erubescens</i>	2	Y	Y	0.09	2	N
<i>Caladenia evanescens</i>	1	Y	Y	0.09	1	N
<i>Caladenia interjacens</i>	4	N	N	17.8	3	N/A
<i>Calymperastrum latifolium</i>	2	N	N	15.43	1	N/A
<i>Carpobrotus</i> sp. Lateral Flowers (N. Gibson & M. Lyons 973) PN	2	N	N	16.34	1	N/A
<i>Chamaexeros longicaulis</i>	2	N	N	10.05	9	N/A
<i>Chamelaucium floriferum</i> subsp. <i>diffusum</i>	2	N	N	10.29	9	N/A
<i>Chordifex jacksonii</i>	3	N	N	18.45	1	N/A
<i>Corybas abditus</i>	3	N	N	17.82	2	N/A
<i>Corybas autumnalis</i>	2	N	N	19.63	2	N/A
<i>Cyathochaeta stipoides</i>	3	Y	Y	1.08	2	N
<i>Diuris drummondii</i>	T	N	N	13.35	1	N/A
<i>Drakaea micrantha</i>	T	N	N	6.49	2	N/A
<i>Drosera binata</i>	2	N	N	5.43	3	N/A
<i>Eucalyptus brevistylis</i>	4	N	N	11.71	20	N/A
<i>Gahnia sclerioides</i>	4	N	N	9.76	5	N/A
<i>Gonocarpus simplex</i>	4	N	N	11.75	5	N/A
<i>Goodenia</i> sp. South Coast (A.R. Annelis ARA 1846)	3	N	N	12.11	4	N/A
<i>Hemigenia microphylla</i>	3	N	N	14.53	7	N/A
<i>Hypocalymma verticillare</i>	2	N	N	17.8	5	N/A
<i>Juncus meianthus</i>	3	N	N	9.06	3	N/A
<i>Lasioptalum</i> sp. Denmark (B.G. Hammersley 2012)	3	N	N	3.18		N/A
<i>Leptinella drummondii</i>	3	N	N	13.44	1	N/A
<i>Lepyrodia extensa</i>	2	N	N	18.46	1	N/A
<i>Leucopogon alternifolius</i>	3	N	N	19.62	1	N/A

Species name	Conser vation status	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]
<i>Lysinema lasianthum</i>	4	N	N	19.73	1	N/A
<i>Microtis globula</i>	T	N	N	16.04	1	N/A
<i>Microtis pulchella</i>	4	N	N	6.46	5	N/A
<i>Myriophyllum trifidum</i>	4	N	N	18.01	1	N/A
<i>Ornduffia submersa</i>	4	N	N	18.34	1	N/A
<i>Pertusaria trachyspora</i>	2	N	N	16.47	1	N/A
<i>Pleurophascum occidentale</i>	4	Y	Y	3.80	10	N
<i>Reedia spathacea</i>	T	N	N	14.84	3	N/A
<i>Rorippa cygnorum</i>	2	N	N	17.08	2	N/A
<i>Schizaea rupestris</i>	2	N	N	15.68	3	N/A
<i>Sphaerolobium benetectum</i>	2	N	N	18.78	3	N/A
<i>Sphagnum novozelandicum</i>	2	N	N	15.83	2	N/A
<i>Spyridium riparium</i>	2	N	N	11.80	4	N/A
<i>Stylidium leeuwinense</i>	4	Y	Y	0.04	25	N
<i>Thomasia quercifolia</i>	4	N	N	6.16		N/A
<i>Thysanotus isantherus</i>	4	N	N	11.78	1	N/A
<i>Verticordia fimbrilepis subsp. australis</i>	T	N	N	11.93	1	N/A
<i>Xanthoparmelia sammyi</i>	1	N	N	11.18	1	N/A
<i>Xanthoparmelia subimitatrix</i>	3	N	N	13.74	2	N/A
<i>Xanthosia eichleri</i>	4	N	N	4.63	9	N/A

A.4. Fauna analysis table

Species name	Conservati on status	Suitabl e habitat feature s? [Y/N]	Suitable vegetatio n type? [Y/N]	Distance of closest record to applicatio n area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Actitis hypoleucos</i> (Common Sandpiper)	MI	N	N	0	3487	N/A
<i>Ardenna carneipes</i> (Flesh-footed Shearwater)	OS	N	N	1.36	481	N/A
<i>Arenaria interpres</i> (Ruddy turnstone)	MI	N	N	8.28	3445	N/A
<i>Bertmainius mysticus</i> (mystical pygmy trapdoor spider)	P2	N	N	12.57	34	N/A
<i>Bertmainius tingle</i> (Tingle pygmy trapdoor spider)	EN	N	N	4.73	47	N/A
<i>Bettongia penicillata ogilbyi</i> (woylie)	CR	Y	Y	7.45	16694	N
<i>Botaurus poiciloptilus</i> (Australasian bittern)	EN	N	N	12.68	419	N/A
<i>Calidris alba</i> (sanderling)	MI	N	N	0	1517	N/A

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]
<i>Calidris ferruginea</i> (curlew sandpiper)	CR	N	N	11.53	2334	N/A
<i>Calidris ruficollis</i> (Red-necked stint)	MI	N	N	0	5552	N/A
<i>Calidris tenuirostris</i> (Great knot)	CR	N	N	15.94	2168	N/A
<i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo)	VU	N	N	7.15	3361	N/A
<i>Calyptorhynchus baudinii</i> (Baudin's cockatoo)	EN	N	N	0	4076	N/A
<i>Calyptorhynchus latirostris</i> Carnaby's cockatoo	EN	N	N	1.55	20924	N/A
<i>Cynotelopus notabilis</i> Western Australian pill millipede	EN	N	N	5.50	169	N/A
<i>Dasyurus geoffroii</i> (chuditch)	VU	Y	Y	4.76	5501	N
<i>Falco peregrinus</i> (Peregrine falcon)	OS	Y	Y	7.38	1786	N
<i>Falsistrellus mackenziei</i> (Western false pipistrelle)	P4	N	N	7.2	530	N/A
<i>Galaxias truttaceus</i> (Western trout minnow)	EN	N	N	13.585	219	N/A
<i>Galaxiella munda</i> (mud minnow)	VU	N	N	8.75	302	N/A
<i>Galaxiella nigrostriata</i> (Black-stripe minnow)	EN	N	N	13.75	287	N/A
<i>Geocrinia lutea</i> (Nornalup frog)	P4	Y	Y	13.75	21	N
<i>Geotria australis</i> (Pouched lamprey)	P3	N	N	6.67	141	N/A
<i>Hydromys chrysogaster</i> (Water-rat)	P4	Y	Y	1.25	813	N
<i>Hydroprogne caspia</i> (Caspian Tern)	MI	N	N	0	4997	N/A
<i>Isoodon fusciventer</i> (quenda)	P4	Y	Y	0.32	9503	N
<i>Limosa lapponica</i> (Bar-tailed godwit)	MI	N	N	7.51	3317	N/A
<i>Nannatherina balstoni</i> (Balston's pygmy perch)	VU	N	N	10.54	232	N/A
<i>Nannoperca pygmaea</i> (Little pygmy perch)	EN	N	N	13.58	63	N/A
<i>Notamacropus eugenii derbianus</i> (tammar wallaby)	P4	Y	Y	14.15	2714	N
<i>Notamacropus irma</i> (western brush wallaby)	P4	Y	Y	15.07	5412	N
<i>Numenius madagascariensis</i> (Eastern curlew)	CR	N	N	15.94	1784	N/A
<i>Oxyura australis</i> (Blue-billed duck)	P4	N	N	14.88	2342	N/A
<i>Pandion cristatus</i> (Osprey)	MI	N	N	2.31	4402	N/A
<i>Pezoporus flaviventris</i> (western ground parrot)	CR	N	N	1.22	331	N/A
<i>Phascogale tapoatafa wambenger</i> (south-western brush-tailed phascogale)	CD	N	N	4.11	1795	N/A

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]
<i>Pseudocheirus occidentalis</i> (western ringtail possum)	CR	Y	Y	3.49	14583	N
<i>Psophodes nigrogularis nigrogularis</i> (western whiptail)	EN	N	N	5.27	624	N/A
<i>Puffinus huttoni</i> (Hutton's shearwater)	EN	N	N	16.24	58	N/A
<i>Setonix brachyurus</i> (quokka)	VU	Y	Y	5.1	6626	N
<i>Spicospina flammocaerulea</i> (sunset frog)	VU	N	N	6.68	269	N/A
<i>Stercorarius antarcticus lonnbergi</i> (Brown Skua)	P4	N	N	16.24	53	N/A
<i>Sternula nereis nereis</i> (fairy tern)	VU	N	N	3.4	640	N/A
<i>Thalassarche chlororhynchos</i> Atlantic yellow-nosed albatross	VU	N	N	0	2978	N/A
<i>Thalasseus bergii</i> (Crested tern)	MI	N	N	0	6744	N/A
<i>Thinornis rubricollis</i> (Hooded plover)	P4	N	N	0	2978	N/A
<i>Tringa glareola</i> (Wood sandpiper)	MI	N	N	14.88	1280	N/A
<i>Tringa nebularia</i> (Common greenshank)	MI	N	N	3.56	5487	N/A
<i>Tringa stagnatilis</i> (Marsh sandpiper)	MI	N	N	14.72	983	N/A
<i>Westralunio carteri</i> (Carter's freshwater mussel)	VU	N	N	7.88	433	N/A
<i>Zephyrarchaea mainae</i> (Main's assassin spider)	VU	Y	Y	4.94	84	N

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

A.5. Land degradation risk table

Risk categories	Blackwater podzols Phase
Wind erosion	30-50% 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	50-70% 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		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared may contain locally or regionally significant flora, fauna, habitats, assemblages of plants. A flora and fauna survey is required to determine the presence/absence of conservation significant flora and fauna habitat.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared may contain significant habitat for conservation significant fauna. A fauna survey is required to determine the presence/absence of conservation significant fauna habitat.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared may contain habitat for flora species listed under the BC Act. A flora survey is required to determine the presence/absence of conservation significant flora habitat.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain species that can indicate a threatened ecological community.</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia.</p> <p>The vegetation proposed to be cleared is considered to be part of a significant ecological linkage in the local area that provides linkage to a National Park and registered Shire Flora Road.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (h):</u> <i>“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></p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area (30 m), the proposed clearing may have an impact on the environmental values of adjacent conservation area through direct and indirect impacts.</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given minor perennial water courses and areas of seasonal inundation are recorded within the application area, the proposed clearing may impact on- or off-site hydrology and water quality. Additionally, the application is likely to contain and impact vegetation growing in association with a watercourse or wetland.</p>	At variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are highly susceptible to phosphorus export (eutrophication) and wind erosion and a moderate to very high risk of waterlogging and inundation. Further information on the management of land degradation risk is required.</p>	At variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p> <p>Given swampy depressions and watercourses are within and adjacent to the application area, the proposed clearing may impact surface water quality through eutrophication and sedimentation. Further information on the management of land degradation risk is required.</p>	May be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p> <p>Given minor water courses are recorded within the application area, the proposed clearing may contribute to waterlogging. Further information on the management of land degradation risk is required.</p>	May be at variance	Yes <i>Refer to Section 3.2.3, above.</i>

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.
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. Photographs of the vegetation



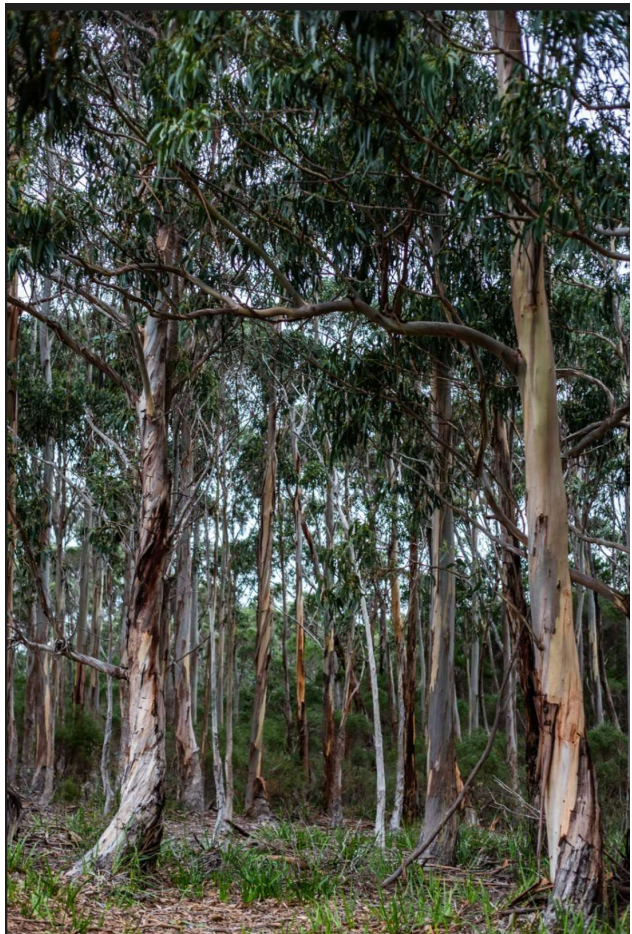
Figure 2: Aerial imagery of application area from 2000



Figure 3: Aerial imagery of application area from 2014

Photographs of the vegetation under application, provided by the applicant - June 2022 (Crabb, 2022b)





Photographs obtained from a site inspection in April by CSLC (2022).



Photograph taken from southern boundary looking north into application area.

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)
- 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
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