



Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 9141/1
Permit type:	Area Permit
Applicant name:	Mr Allen Mayer and Ms Linda Bridge
Application received:	9 December 2020
Application area:	0.038 hectares of native vegetation
Purpose of clearing:	Residential home and garage
Method of clearing:	Mechanical removal
Property:	Lot 202 on Plan 22307, Quindalup
Location (LGA area/s):	City of Busselton
Localities (suburb/s):	Quindalup

1.2. Description of clearing activities

The applicant proposes to construct a residential dwelling at Lot 202 on Plan 22307, Quindalup. Clearing of 0.038 hectares of native vegetation is required. See Section 1.5, Figure 1.

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	6 April 2021
Decision area:	0.038 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 public comment for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix F2), the findings of Western Ringtail Possum Survey (Appendix A), 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 Delegated Officer also took into consideration the purpose of the clearing to construct a residential dwelling.

The assessment identified that the proposed clearing may result in dieback and weeds being inadvertently introduced into adjacent areas of native vegetation, and potential death or injury to any Western Ringtail Possums (*Pseudocheirus occidentalis*) that may be present in the application area during the time of clearing.

After the consideration of available information, the Delegated Officer determined that the proposed clearing can be minimised and managed to be unlikely 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 dieback and weeds;
- undertake slow, progressive one directional clearing from south to north to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity; and
- engage a Western Ringtail Possum specialist to inspect the area prior to, and for the duration of, clearing activities and if required appropriately remove any individual Western Ringtail Possums prior to the clearing.

1.5. Site map

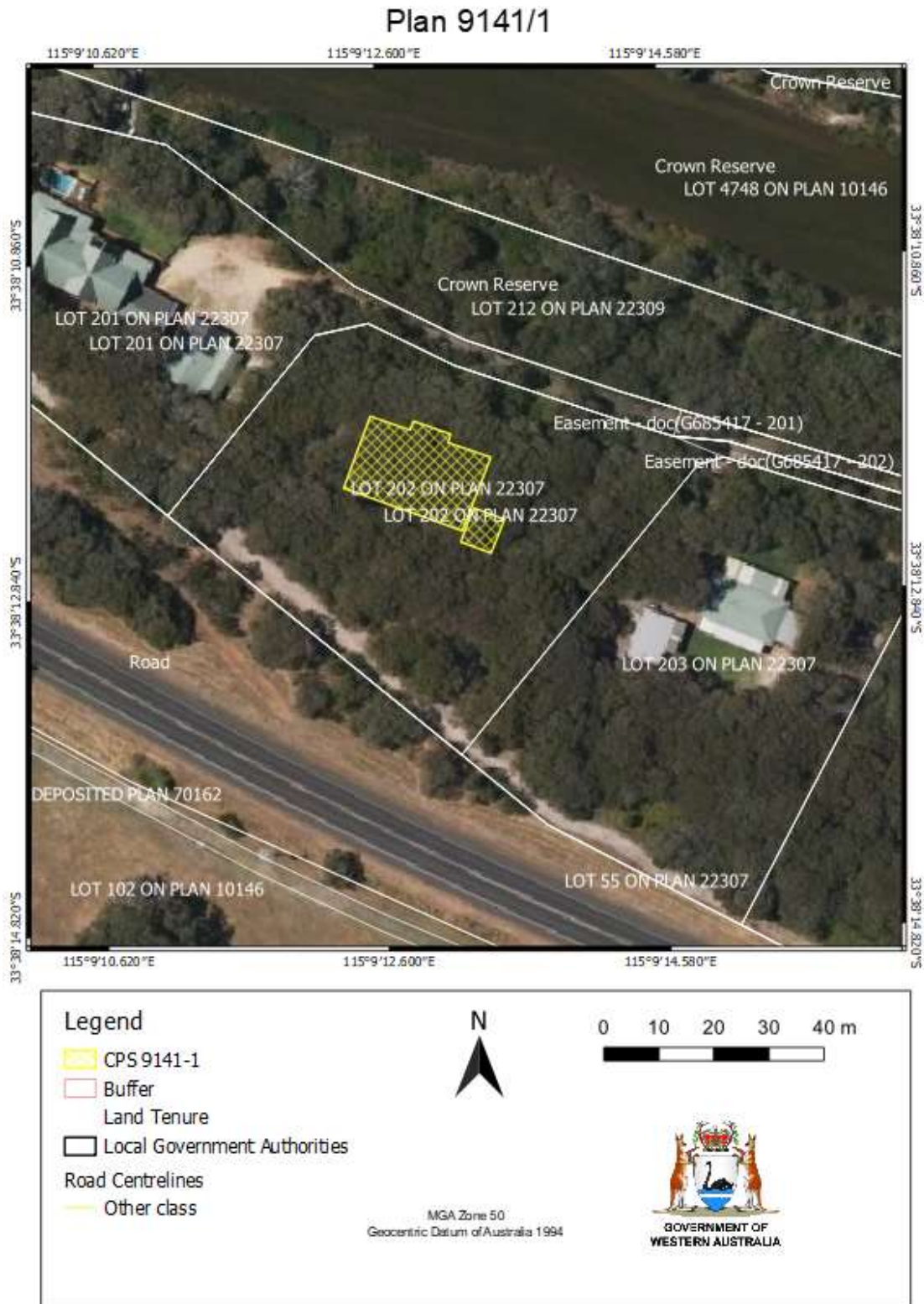


Figure 1. Map of the application area CPS 9141/1. The area cross-hatched yellow indicates the area within which 0.038 hectares of native vegetation is authorised to be cleared under the granted clearing permit.

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 3), 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; and
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment includes:

- *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)
- *Soil and Land Conservation Act 1945* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER October 2019)
- *Environmental Offsets Guidelines* (August 2014) (*Delete if offsets not considered*)
- *Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020)

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant has committed to clear the minimum requirement to enable the construction of a residential dwelling and garage, and retain all trees wherever possible (Mayer and Bridge 2020). The application area was reduced from 0.045 hectares to 0.038 hectares during the assessment.

3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix B) and considered whether the clearing poses a risk to environmental values and whether these can be managed to be environmentally acceptable. An assessment against the Clearing Principles is contained in Appendix C.

The assessment identified that the clearing may pose a risk to the environmental values of biological values (fauna) and nearby wetlands, and that these required further consideration. 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. Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment: According to available databases, 29 birds, seven mammals and one reptile of conservation significance have been recorded within ten kilometres of the application area (Appendix B2).

Of the birds, 15 are wading shorebirds, two are marine, three are Terns, and one is a waterfowl that inhabits wetlands. No habitat for these species is present over the application area. Three species of Threatened black cockatoo have been recorded in the local area, however, no breeding, roosting or quality feeding habitat is present. There is one historical record (1900) of the Vulnerable Malleefowl (*Leipoa ocellata*) within the local area but the species no longer occurs. Raptors and the Fork-tailed Swift (*Apus pacificus*) may overfly the application area without utilising the habitat present.

Of the mammals, the Priority 4 Water-rat (*Hydromys chrysogaster*) inhabits wetland or estuarine habitats that are not present, and the Western False Pipistrelle (*Falsistrellus mackenziei*) (a bat) may potentially overfly the application area but its range has contracted to old growth forest and higher rainfall eucalypt woodlands (Richards *et al.* 2012). The Vulnerable Chuditch (*Dasyurus geoffroii*) and Conservation Dependant South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) are wide-ranging with large home ranges requiring large contiguous areas of woodland habitat, and the Priority 4 listed Western Brush Wallaby (*Notamacropus irma*) is a grazer and optimum habitat is more open forest or woodland (DBCA 2020) which is not present in the vicinity of the application area. The Priority 3 reptile *Ctenotus ora* is found in sand dunes south of Perth, and in the local area has been recorded in Spearwood dunes which are not present in the application area.

Numerous sightings of the Priority 4 Quenda (*Isodon fusciventer*) are recorded from the local area. Quenda require a dense understorey for cover (van Dyck and Strahan 2008). Minor areas of Coastal Sword Sedge (*Lepidosperma gladiatum*) over the application area would provide the required cover, however, suitable contiguous dense understorey habitat is not present over the entire application area.

Of the vertebrate fauna species of conservation significance identified, the species known to occur over the application area is the Western Ringtail Possum. The Western Ringtail Possum (*Pseudocheirus occidentalis*) is listed as Critically Endangered under the *Biodiversity Conservation Act 2016*, and Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Thirteen records of the Western Ringtail Possum have been previously recorded within one kilometre of the application area (DBCA 2007). The application area is located within one of three management zones identified by DPaW (2014), that being, the Swan Coastal Plain zone incorporating the Peppermint (*Agonis flexuosa*) woodlands and Peppermint / Tuart (*Eucalyptus gomphocephala*) forests on the southern extremity of the Swan Coastal Plain, extending from north of Bunbury to Augusta, but principally around Busselton (DPaW 2014). The highest densities occur on the Swan Coastal Plain and south coast areas (Jones *et al.* 1994), and the application area is located within an area mapped as Very High habitat value for Western Ringtail Possums (Figure 2).



Figure 2. Western Ringtail Possum mapped habitat suitability in the vicinity of the application area

Peppermint leaves form the basis of the Western Ringtail Possum's diet in coastal areas (Jones *et al.* 1994), and home ranges in Peppermint dominated habitat average 0.4 hectares and 0.3 hectares for females and males respectively (DPaW 2014; Jones *et al.* 1994). Resting sites include constructed dreys and tree hollows, with dreys constructed in the canopy when hollows are not available.

A Western Ringtail Possum Survey was undertaken over Lot 202 on Plan 22307, Quindalup (Lot 202), that included the application area, in February and March 2021 (SW environmental 2021) (Appendix A). SW environmental (2021) reported that Lot 202 consisted of a Low Open Forest of *Agonis flexuosa* (Peppermint) over cleared understorey or patches predominantly of Coastal Sword Sedge (*Lepidosperma gladiatum*). The Peppermint trees occurring are small (<30cm DBH) and multi-stemmed. The canopy is broadly connected, within and offsite. The vegetation is dense in adjacent properties, particularly to the north of the application area associated with Toby Inlet (SW environmental 2021).

No hollows were present over Lot 202 and no Western Ringtail Possums or dreys, were recorded over the application area itself. Two dreys were located outside of the application area, along the eastern edge of Lot 202. Three Western Ringtail Possums were recorded close to the two dreys and a nocturnal survey recorded five individuals feeding in the Peppermint canopy within Lot 202 (Appendix E2).

At a broader scale, the application area forms part of a South West Regional Ecological Linkage (SWREL 63). This indicates that vegetation has high value habitat connectivity or corridor importance (Molloy *et al.* 2009). The application area forms part of a larger connected belt of native vegetation (Figure 3) with numerous Western Ringtail Possum recorded locally (DBCA 2007). Crown Reserve R 26122 (Lot 212 on Plan 22309) is located within 17 metres to the north of the application area (Figure 2 and Figure 3). Reserve R 26122 is vested with the City of Busselton with the purpose of public recreation. Broader areas of reserved lands form a larger connected belt of native vegetation (Figure 3).



Figure 3. Reserves in relation to the CPS 9141-1 application area

Lot 202 is being utilised by Western Ringtail Possums as part of a larger habitat patch. The low number of dreys present compared to the number of Western Ringtail Possums observed is likely to be an indication of the presence of other better quality and dense habitat in close proximity, but outside of, Lot 202 (SW environmental 2021).

Recognised high value habitat for Western Ringtail Possums includes long unburnt mature remnants of Peppermint woodlands with high canopy continuity, high foliage nutrients, and habitat connecting patches of remnants (DPaW 2014; Jones *et al.* 1994). Habitat fragmentation between remnant patches has important implications on the long-term viability of populations (DPaW 2014).

The application area comprises a Low Open Forest of Peppermint. An open forest suggests that canopy cover is not complete, with SW environmental (2021) reporting that canopy cover is broadly connected, with Peppermints present being small with little to no ground cover (Appendix E1). The Peppermint vegetation over the application area is therefore not mature and, given the location, not likely to be long unburnt.

More mesic areas, such as riparian zones, generally support higher densities of Western Ringtail Possums (Wayne 2006), and populations of the Swan Coastal Plain management zone are associated with stands of Peppermint growing near swamps, watercourses or floodplains (DPaW 2014). The availability of nitrogen is an important determinant of browse quality and habitat suitability (Shedley and Williams 2014). Higher nitrogen concentrations are associated with more rapid plant growth, and trees growing in mesic or riparian areas are more likely to maintain nitrogen uptake throughout the summer months to provide a continuous supply of higher foliar nitrogen (Shedley and Williams 2014). Vegetation is relatively dense in properties adjacent to the application area, and particularly to the north where a riparian closed forest associated with Toby Inlet occurs (SW environmental 2021). This closed forest likely provides high canopy continuity in comparison to the low open forest described for the application area, and also likely to provide higher foliage nutrients when compared to the application area, due to its more mesic qualities.

Proposed clearing of 0.038 hectares of native vegetation, given its size and position, is unlikely to sever or disrupt the South West Regional Ecological Linkage. Areas of native vegetation immediately to the north of the application area extend to the west and east for at least two kilometres, much of it within reserved lands available for movement and dispersal of Western Ringtail Possums (Figure 3).

The application area is likely being used by Western Ringtail Possums for foraging and movement between adjacent habitats, rather than for refuge and diurnal nesting (SW environmental 2021). The proposed clearing of 0.038 hectares of native vegetation equates to approximately 12 per cent of an estimated Western Ringtail Possum home range in Peppermint dominated habitat (DPaW 2014; Jones *et al.* 1994), and is unlikely to disrupt habitat linkages nor significantly impact foraging habitat availability.

Remnant native vegetation occurs adjacent to the application area and in consideration of the clearing process there is the potential to introduce or spread dieback and weeds into adjacent areas.

Conclusion: Based on the above assessment, proposed clearing may result in dieback and weeds being inadvertently introduced into adjacent areas of native vegetation, or death or injury to any Western Ringtail Possums present in the application area during the time of clearing. No diurnal shelters are known from the application area, and the likelihood of individual possums being present at the time of diurnal clearing is likely to be low. The implementation of slow and directional clearing will mitigate any impacts in the unlikely event of any Western Ringtail Possums occupying a diurnal roost within the application area at the time of clearing. An experienced Western Ringtail Possum specialist should inspect the area prior to, and for the duration of clearing activities, with clearing activities ceasing where any possums are identified until they either move on, or are appropriately removed by the specialist.

For the reasons set out above, it is considered that the impacts of the proposed clearing on adjacent native vegetation and Western Ringtail Possums can be managed by taking steps to minimise the risk of the introduction and spread of dieback and weeds, slow directional clearing to allow fauna to move into adjacent vegetation, and the engagement of an experienced Western Ringtail Possum specialist to monitor clearing activities.

The applicant may have notification responsibilities under the EPBC Act for impacts to Western Ringtail Possums and their habitats, as set out in the EPBC Act significant impact guidelines (Government of Australia 2009). The applicant has been advised to contact the federal Department of Water, Agriculture and the Environment (DAWE) to discuss EPBC Act referral requirements.

Conditions: To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Management actions to minimise the risk of the introduction or spread of dieback disease and weeds;
- Slow, directional clearing from south to north to allow fauna to move into adjacent vegetation ahead of the clearing;
- Engagement of an experienced Western Ringtail Possum specialist to monitor the clearing activity.

3.2.2. Environmental value: nearby wetlands – Clearing Principle (h)

Assessment: The application area is located in the Coastal Plain hydrological zone, and the Vasse-Wonnerup Consanguineous Wetlands Suite. An unnamed conservation category wetland (CCW) is located approximately 30 metres to the north of the application area (UFI 137) associated with Toby Inlet. The application area is located within an Environmentally Sensitive Area (ESA) associated with this conservation category wetland (that is, within 50 metres of the mapped wetland boundary) (Figure 4).

Conservation category wetlands are wetlands that support a high level of ecological functions and attributes, and are high priority wetlands that require protection against possible degradation to their values (Water and Rivers Commission 2001). The Toby Inlet system is a continuous, perennial system covering a linear distance east to west of approximately 3.8 kilometres. At a broader scale the application area forms part of a South West Regional Ecological Linkage (SWREL 63) that includes UFI 137 (Molloy *et al* 2009).

Vegetation of the application area is contiguous with the conservation category wetland UFI 137 (Toby Inlet). Apart from Toby Inlet to the north there are no other watercourses in the vicinity, or within the application area itself, and the application area does not support riparian vegetation (Appendix E1). Reserve R 26122, vested with the City of Busselton, provides a buffer of 22.5 metres between the application area and conservation category wetland UFI 137 (Figures 4).

Remnant native vegetation occurs adjacent to the application area and in consideration of the clearing process there is the potential to introduce or spread dieback and weeds into adjacent areas.

Conclusion: Due to location and size, the proposed clearing of 0.038 hectares of native vegetation is unlikely to sever or disrupt regional ecological linkages, nor impact the values of conservation category wetland UFI 137. The clearing process has the potential to introduce or spread dieback and weeds into adjacent remnant native vegetation and the implementation of dieback and weed management strategies will reduce this risk.

Conditions: To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Management actions to minimise the risk of the introduction or spread of dieback disease and weeds.

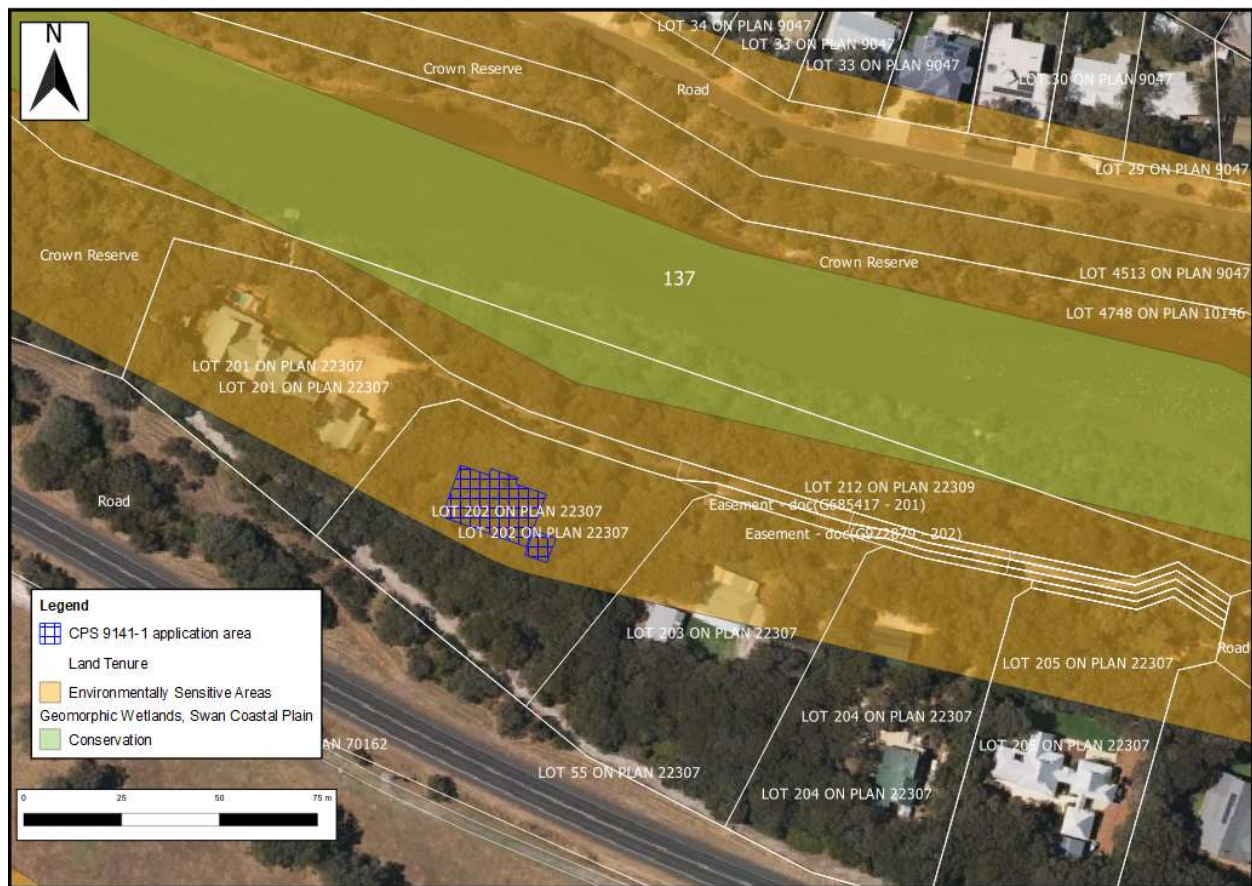


Figure 4. Conservation category wetland UFI 137 (green) in relation to the CPS 9141-1 application area

3.3. Relevant planning instruments and other matters

The application was advertised on the DWER website for a 21 day public comment period. No public submissions were received in relation to this application.

Development Approval to construct the residential building within the application area as submitted has been received from the City of Busselton (DA20/0689) (City of Busselton 2021).

The application area is located outside of any surface water and irrigation districts areas or groundwater areas, proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). There are no rivers proclaimed under the RIWI Act in the vicinity of the application area. The application area is not located within a clearing control catchment under the *Country Areas Water Supply Act 1947* (CAWS Act), nor any public drinking water source areas.

The application area is located within the boundaries of the South West Boojarah #2 Indigenous Land Use Agreement (ILUA). Native Title Claims filed include the Single Noongar Claim (Area 2) (WAD6012/2003) and the Single Noongar Claim Group Compensation Claim (WAD580/2019). Native Title Registered Claims include the Harris Family (WAD6085/1998) and South West Boojarah #2 (WAD253/2006).

Toby Inlet (Place ID 38325) approximately 48 metres to the north of the application area is an Aboriginal Heritage Place. It is the applicant's responsibility to ensure compliance with any obligations under the *Aboriginal Heritage Act 1972*.

Appendix A –Information provided by applicant

Summary	Reference
Supporting Information for clearing permit application CPS 9141-1 including a justification and description of clearing activities, avoidance and minimisation actions, and plans for a residential dwelling on Lot 202 on Plan 22307, Quindalup	Mayer and Bridge (2020)
Additional supporting information for clearing permit application CPS 9141-1 that incorporating a Western Ringtail Possum Survey of 11 Backwater Retreat, Quindalup (Lot 202 on Plan 22307)	SW environmental (2021)

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.

1. Site summary

Site characteristic	Details																										
Local context	The application area is situated within the Swan Coastal Plain IBRA region as described by Thackway and Cresswell (1995) and the Perth subregion. Spatial data indicates that the local area (10 kilometre radius of the proposed clearing area) retains over 26.1 per cent of the original native vegetation cover.																										
Vegetation description	<p>Vegetation complexes have been mapped and described across the site by Heddle <i>et al.</i> (1980) as updated by Webb <i>et al.</i> (2016). Vegetation of the application area is described as the Quindalup Complex (55) of a coastal dune complex consisting mainly of two alliances - the strand and fore-dune alliance and the mobile and stable dune alliance. The local site variation is the closed scrub of <i>Acacia rostellifera</i> (Summer-scented Wattle) and the low closed <i>Agonis flexuosa</i> (Peppermint) forest of Geographe Bay.</p> <p>SW environmental (2021) describe the vegetation of the application area as a Low Open Forest of <i>Agonis flexuosa</i> (Peppermint) over cleared understorey or patches of Coastal Sword Sedge (<i>Lepidosperma gladiatum</i>). Other native shrubs are also present in some places. The Peppermint trees are typically small and multi-stemmed (<30cm DBH). The canopy is broadly connected, within and offsite, and vegetation is relatively dense in adjacent properties, particularly to the north of the application area associated with Toby Inlet.</p>																										
Vegetation condition (Keighery 1994)	Based on the report of SW environmental (2021) and representative photographs (Appendix E1) vegetation is predominantly in Degraded to Good condition (Keighery 1994 - Appendix D), with some areas of Very Good where patches of Coastal Sword Sedge occur, and the understorey is intact.																										
Soil description	The application area is located within the Quindalup Complex (Quindalup South Qf2 Phase) of relict foredunes and gently undulating beach ridge plain with deep uniform calcareous sands (Schoknecht, <i>et al.</i> 2004).																										
Land degradation risk (DPIRD 2017)	<p>Land degradation risk ratings are provided in the table below.</p> <table border="1"> <thead> <tr> <th rowspan="2">Aspect</th> <th colspan="2">Murray Subsystem</th> </tr> <tr> <th colspan="2">Hazard Rating</th> </tr> </thead> <tbody> <tr> <td>Wind Erosion</td> <td>M2</td> <td>+Medium</td> </tr> <tr> <td>Water Erosion</td> <td>L2</td> <td>+Low</td> </tr> <tr> <td>Water-logging</td> <td>L2</td> <td>+Low</td> </tr> <tr> <td>Water repellance</td> <td>H1</td> <td>+High</td> </tr> <tr> <td>Phosphorus export</td> <td>L2</td> <td>+Low</td> </tr> <tr> <td>Salinity</td> <td>L2</td> <td>+Low</td> </tr> <tr> <td>Flood Risk</td> <td>L2</td> <td>+Low</td> </tr> </tbody> </table> <p>Acid sulphate soil risk has been mapped as Moderate to Low.</p>	Aspect	Murray Subsystem		Hazard Rating		Wind Erosion	M2	+Medium	Water Erosion	L2	+Low	Water-logging	L2	+Low	Water repellance	H1	+High	Phosphorus export	L2	+Low	Salinity	L2	+Low	Flood Risk	L2	+Low
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Waterbodies	The application area is located in the Coastal Plain hydrological zone, and the Vasse-Wonnerup Consanguineous Wetlands Suite. An unnamed conservation category wetland (CCW) is located approximately 30 metres to the north of the application area (UFI 137) associated with Toby Inlet. The application area is located within an Environmentally Sensitive Area (ESA) associated with this conservation category wetland.																										

Site characteristic	Details
	<p>The application area is located outside of any surface water and irrigation districts areas or groundwater areas, proclaimed under the RIWI Act. There are no rivers proclaimed under the RIWI Act in the vicinity of the application area. An unnamed minor river associated with Toby Inlet is located approximately 50 metres to the north of the application area.</p> <p>The application area is not located within a clearing control catchment under the <i>Country Areas Water Supply Act 1947</i> (CAWS Act), nor any public drinking water source areas.</p> <p>Groundwater is mapped at 3,000-7,000 mg/l TDS. That is, 'brackish'</p>
Conservation areas	<p>The Ngari Capes Marine Park is located 360 metres to the north of the application area. There are no terrestrial lands managed by the Department of Biodiversity, Conservation and Attractions (DBCA) within seven kilometres of the application area, with the closest being the Locke Nature Reserve.</p> <p>The application area is located in immediate proximity to a mapped South West Regional Ecological Linkage (63) and within an Environmentally Significant Area (ESA) associated with the unnamed conservation category wetland (CCW) approximately 30 metres to the north of the application area (UFI 137) associated with Toby Inlet.</p> <p>Crown Reserve R 26122 (Lot 212 On Plan 22309) is located within 17 metres to the north of the application area. Reserve R 26122 is vested with the City of Busselton with the purpose of public recreation.</p>
Climate and landform	<p>The climate of Busselton is warm and temperate. The winter months have higher rainfall than summer months with an annual rainfall of approximately 807 millimetres (BOM 2020).</p> <p>The application area is located within the Quindalup South System of Coastal dunes, of the Swan Coastal Plain, with calcareous deep sands and yellow sands supporting coastal scrub.</p>

2. Ecosystem, flora, and fauna analysis

With consideration for the site characteristics set out above, and relevant datasets (Appendix F2), an analysis of relevant ecosystem, flora, and fauna factors are presented below.

2a) Ecological Linkages

The application area is located in immediate proximity to a mapped South West Regional Ecological Linkage (63) and within an Environmentally Significant Area (ESA) associated with the unnamed conservation category wetland (CCW) approximately 30 metres to the north of the application area (UFI 137) associated with Toby Inlet.

2b) Ecological Communities

There are no mapped Threatened Ecological Communities (TECs) endorsed by the Western Australian Minister for Environment within three kilometres of the application area. The EPBC Act listed (Vulnerable) Subtropical and Temperate Coastal Saltmarsh, considered a Priority Ecological Community (P3) by DBCA has been mapped approximately 235 metres south of the application area. Vegetation of the application area does not align with any mapped TECs or PECs recorded from the local area.

2c) Conservation significant flora recorded within ten kilometres of the application area

Eleven Threatened flora taxa and 18 Priority flora taxa (one P2, eight P3, and nine P4) have been recorded within ten kilometres of the application area. Due to the dense canopy of *Agonis flexuosa*, the predominantly patchy or cleared understorey and lack of significant records within the vicinity, no flora taxa of conservation significance are likely to occur over the application area.

Threatened Flora Taxon	Status	Habitat/Soil type
<i>Caladenia busselliana</i>	CR	No
<i>Caladenia caesarea</i> subsp. <i>maritima</i>	CR	No
<i>Caladenia huegelii</i>	CR	No

Threatened Flora Taxon	Status	Habitat/Soil type
<i>Caladenia procera</i>	CR	No
<i>Caladenia viridescens</i>	CR	No
<i>Eucalyptus x phylacis</i>	CR	No
<i>Gastrolobium argyrotichum</i>	CR	No
<i>Caladenia excelsa</i>	EN	No
<i>Drakaea micrantha</i>	EN	No
<i>Banksia squarrosa subsp. argillacea</i>	VU	No
<i>Daviesia elongata</i>	VU	No

Priority Flora Taxon	Status	Habitat/Soil type
<i>Thelymitra variegata</i>	P2	No
<i>Acacia lateritica var. Glabrous variant</i>	P3	No
<i>Cyathochaeta teretifolia</i>	P3	No
<i>Grevillea brachystylis subsp. brachystylis</i>	P3	No
<i>Johnsonia inconspicua</i>	P3	No
<i>Lepyrodia heleocharoides</i>	P3	No
<i>Loxocarya magna</i>	P3	No
<i>Olearia strigosa</i>	P3	No
<i>Pultenaea pinifolia</i>	P3	No
<i>Stylidium lowrieianum</i>	P3	No
<i>Acacia flagelliformis</i>	P4	No
<i>Acacia semitrullata</i>	P4	No
<i>Boronia tenuis</i>	P4	No
<i>Calothamnus graniticus subsp. graniticus</i>	P4	No
<i>Eucalyptus rudis subsp. cratyantha</i>	P4	No
<i>Eucalyptus virginea</i>	P4	No
<i>Gahnia sclerioides</i>	P4	No
<i>Thysanotus isantherus</i>	P4	No
<i>Verticordia lehmannii</i>	P4	No

2d) Conservation significant fauna recorded within ten kilometres of the application area:

Habitat to support the Critically Endangered Western Ringtail Possum is present over the application area.

Scientific name	Common name	Status	Habitat present
BIRDS			
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	EN	No
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	EN	No
<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	VU	No
<i>Leipoa ocellata</i>	Malleefowl	VU	No
<i>Falco peregrinus</i>	Peregrine falcon	OS	No
<i>Ninox connivens connivens</i> (SW)	Barking owl	P3	No
<i>Pandion cristatus</i>	Osprey	MI	No
<i>Apus pacificus</i>	Fork-tailed swift	MI	No
<i>Oxyura australis</i>	Blue-billed duck	P4	No
<i>Calidris ferruginea</i>	Curlew sandpiper	CR	No
<i>Numenius madagascariensis</i>	Eastern curlew	CR	No
<i>Charadrius mongolus</i>	Lesser Sand Plover	EN	No
<i>Thinornis rubricollis</i>	Hooded plover	P4	No
<i>Charadrius leschenaultii</i>	Greater sand plover	VU	No
<i>Actitis hypoleucos</i>	Common Sandpiper	MI	No
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	MI	No
<i>Calidris alba</i>	Sanderling	MI	No
<i>Calidris melanotos</i>	Pectoral Sandpiper	MI	No
<i>Calidris ruficollis</i>	Red-necked stint	MI	No
<i>Limosa lapponica</i>	Bar-tailed godwit	MI	No
<i>Limosa limosa</i>	Black-tailed godwit	MI	No

Scientific name	Common name	Status	Habitat present
<i>Tringa glareola</i>	Wood sandpiper	MI	No
<i>Tringa nebularia</i>	Common greenshank	MI	No
<i>Tringa stagnatilis</i>	Marsh sandpiper	MI	No
<i>Phaethon rubricauda</i>	Red-tailed tropicbird	P4	No
<i>Oceanites oceanicus</i>	Wilson's storm-petrel	MI	No
<i>Hydroprogne caspia</i>	Caspian Tern	MI	No
<i>Onychoprion anaethetus</i>	Bridled tern	MI	No
<i>Thalasseus bergii</i>	Crested tern	MI	No
MAMMALS			
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum	CR	Yes
<i>Dasyurus geoffroi</i>	Chuditch	VU	No
<i>Phascogale tapoatafa wambenger</i>	Brush-tailed phascogale	CD	No
<i>Isoodon fusciventer</i>	Quenda	P4	No
<i>Notamacropus irma</i>	Western brush wallaby	P4	No
<i>Hydromys chrysogaster</i>	Water-rat	P4	No
<i>Falsistrellus mackenziei</i>	Western false pipistrelle	P4	No
REPTILES			
<i>Ctenotus ora</i>	Coastal Plains skink	P3	No
INVERTEBRATES			
<i>Engaewa pseudoreducta</i>	Margaret R. burrowing crayfish	CR	No
<i>Engaewa reducta</i>	Dunsborough burrowing crayfish	EN	No
<i>Westralunio carteri</i>	Carter's freshwater mussel	VU	No
<i>Pachysaga strobila</i>	Vasse pachysaga (Katydid)	P1	No

2e) Western Ringtail Possum habitat assessment

Thirteen records of the Western Ringtail Possum (WRP) within one kilometre of the application area are recorded within fauna databases.

SW environmental (2021) undertook a Western Ringtail Possum Survey of Lot 202 on Plan 22307, Quindalup Lot 202) that included the application area (Appendix E2). SW environmental (2021) reported:

- No hollows were present over Lot 202;
- No WRP or dreys, were recorded over the application area;
- Two dreys were located outside of the application area, along the eastern edge of Lot 202;
- Three WRP were recorded close to the two dreys during a diurnal search;
- A nocturnal survey recorded five individuals feeding in the Peppermint canopy within Lot 202;
- An additional three WRP were along the edges, but outside of Lot 202.

3. Vegetation extent

3a) Regional vegetation mapping

	Pre-European extent (ha)	Current extent (ha)	Remaining %	Current extent in all DBCA managed land (ha)	Current Extent in all DBCA managed land (proportion of Pre-European extent) %
IBRA bioregion:					
Swan Coastal Plain	1,501,222	579,814	38.6 %	153,955	10.26
Vegetation complex:					
Quindalup (SCP 55)	54,574	33,012	60.5 %	5,995	10.98

3b) Remnant vegetation within ten kilometres of the application area

Remnant Vegetation	Hectares	Remaining %
Total Area (10 km radius)	18,221	100
Remnant vegetation remaining	4,754	26.1 %

Appendix C – 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> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u> Regional vegetation of the application area is described as the Quindalup Complex (55) of a coastal dune complex consisting of closed scrub of <i>Acacia rostellifera</i> (Summer-scented Wattle) and the low closed <i>Agonis flexuosa</i> (Peppermint) forest of Geographe Bay. Vegetation consists of a Low Open Forest of <i>Agonis flexuosa</i> (Peppermint) over a cleared understorey, or patches of Coastal Sword Sedge (<i>Lepidosperma gladiatum</i>). There are a network of firebreaks and access tracks throughout the application area (SW environmental 2021). The Peppermint trees present are typically small and multi-stemmed. No Threatened or Priority flora taxa have been recorded within 3.5 kilometres of the application area apart from a historical record (the year 1901) of the Priority 4 <i>Verticordia lehmannii</i> located 805 metres to the west in fringing estuarine vegetation (WAH 1998-). <i>Verticordia lehmannii</i> is unlikely to occur in the <i>Agonis</i> dominated vegetation present. The vegetation present is unlikely to support flora species of conservation significance, does not represent a significant ecological community, and does not comprise a high level of biodiversity.</p>	Not likely to be at variance	No
<p><u>Principle (b):</u> “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.”</p> <p><u>Assessment:</u> The Western Ringtail Possum (<i>Pseudocheirus occidentalis</i>) is listed as Critically Endangered under the <i>Biodiversity Conservation Act 2016</i>, and Critically Endangered under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) (EPBC Act). The application area is located within an area mapped as Very High suitability for Western Ringtail Possums, with at least 13 records of the species have been made within one kilometre of the application area, including records as recent as 2020. A recent survey (SW environmental 2021) recorded both Western Ringtail Possums and dreys within the vicinity of the application area.</p>	At variance	Yes See Section 3.2.1
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u> Eleven Threatened flora taxa have been recorded within ten kilometres of the application area, including seven that are Critically Endangered, two that are Endangered, and two that are Vulnerable. No records have been made within 3.5 kilometres of the application area, and most of the species are orchids (seven). Due to the overstorey of <i>Agonis flexuosa</i>, the predominantly patchy or cleared understorey and the distance of known records, Threatened flora taxa of conservation significance are unlikely to occur over the application area and the application area is unlikely to be necessary for, the continued existence of Threatened flora.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> “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.”</p>	Not at variance	No

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Assessment:</u> There are no mapped Threatened Ecological Communities (TECs) endorsed by the Western Australian Minister for Environment within three kilometres of the application area. The Agonis dominated vegetation of the application area does not align with any mapped TECs recorded from the local area and the application area is unlikely to comprise the whole or a part of, or be necessary for the maintenance of, a Threatened Ecological Community.</p>		
Environmental values: 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> 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 the year 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001). One Swan Coastal Plain vegetation complex of Hedde <i>et al</i>, (1980) has been mapped over the application area (Hedde <i>et al</i>, 1980 as updated by Webb <i>et al</i>. 2016); Quindalup (SCP 55). This vegetation complex has over 60 per cent of its original extent remaining (Government of Western Australia 2019). Approximately 4,754 hectares of native vegetation has been retained within the local area (or 26.1 per cent).</p> <p>The application area is located in immediate proximity to a mapped South West Regional Ecological Linkage (63). Vegetation over the application area is not a component of riparian vegetation associated with Toby Inlet, and proposed clearing will not sever this ecological linkage. Vegetation surrounding the application area, and in particular within Crown Reserve R 26122 (Lot 212 0n Plan 22309) to the north, will retain ecological linkage function. The application area is not considered significant as a remnant of native vegetation in an area that has been extensively cleared.</p>	Not likely to be at variance	No
<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> The closest area managed for conservation is the Ngari Capes Marine Park, located approximately 360 metres to the north of the application area (Geographe Bay). There are no terrestrial lands managed by DBCA within seven kilometres of the application area, with the closest being the Locke Nature Reserve. Proposed clearing will not have an impact on the environmental values of any adjacent or nearby conservation area.</p>	Not likely to be at variance	No
Environmental values: 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> An unnamed conservation category wetland (CCW) is located approximately 30 metres to the north of the application area (UFI 137), associated with Toby Inlet. The application area is located within an Environmentally Sensitive Area (ESA) associated with this conservation category wetland. The application area does not support riparian vegetation.</p>	Not likely to be at variance	Yes See Section 3.2.2
<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>	Not likely to be at variance	No

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Assessment:</u> The mapped soils of the Quindalup Complex (Quindalup South Qf2 Phase) of deep uniform calcareous sands are generally resistant to water erosion, waterlogging, Phosphorus export, and salinity (DPIRD 2017). The risk of water repellance is rated as high and wind erosion as medium. Water repellance will not be an issue for the construction of a residential building, and wind erosion can be managed by and standard construction methodologies including strategies to manage wind and water erosion. Impacts to surrounding landscapes, soils, or drainage systems can also be managed through appropriate design. The proposed clearing for a residential building with conditional development approval is not likely to cause appreciable land degradation.</p>		
<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> The application area is located outside of any surface water and irrigation districts areas or groundwater areas, proclaimed under the RIWI Act. There are no rivers proclaimed under the RIWI Act in the vicinity of the application area. The application area is also not located within a clearing control catchment under the <i>Country Areas Water Supply Act 1947 (CAWS Act)</i>, nor any public drinking water source areas. Groundwater is mapped at 3,000-7,000 mg/l TDS. That is, ‘brackish’.</p> <p>No drainage lines intersect the application area, with the nearest watercourse being an unnamed minor river associated with Toby Inlet approximately 50 metres to the north that also encompasses a conservation category wetland (CCW) (Principle f). Standard and staged construction methodologies will be implemented including strategies for drainage control and water erosion. Groundwater will not be intersected and considering that no drainage lines intersect the application area, and the separation distance to the closest watercourse, proposed clearing is unlikely to cause any deterioration in the quality of surface or underground water.</p>	Not likely to be at variance	No
<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> The mapped soils of the Murray Subsystem (255MvMY) are generally resistant to waterlogging (DPIRD 2017). The application area is mapped in an area of low (L2) flood risk (DPIRD 2017), and is located outside of any recognised floodplain areas. A one in 100 year annual exceedance probability (AEP) floodplain area is mapped within 12 metres to the north of the application area. A notification is to be placed on the Certificate of Title advising of a vulnerable coastal area. That is, the location is an area likely to be subject to coastal erosion and/or inundation over the next 100 years (City of Busselton 2021).</p> <p>Standard construction methodologies will be implemented including strategies for drainage control and water erosion. Surface flows may occur over short distances for short periods during, and immediately after, very intense rainfall, however, the proposed clearing is not likely to cause, or exacerbate, the incidence or intensity of flooding.</p>	Not 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.

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 –Biological survey information

1. Representative photographs of the application area



Photo 1 Typical Low Open Forest of *Agonis flexuosa* (Peppermint) over areas of Coastal Sword Sedge (*Lepidosperma gladiatum*).



Photo 2 Typical Low Open Forest of *Agonis flexuosa* (Peppermint) showing cleared understory.

2. Biological survey excerpt (Emerge 2021)



Appendix F – References and databases

1. References

- Bureau of Meteorology (BOM) (2020) Climate classification maps. Available from: http://www.bom.gov.au/jsp/ncc/climate_averages/climate-classifications/index.jsp?mctype=kpn#maps
- City of Busselton (2021) City of Busselton response to CPS 9141/1. Development approval obtained. Received by DWER on 21 January 2021 (DWER Ref A1974069)
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2020) Fact Sheet. Western Brush Wallaby *Macropus irma* (Jourdan, 1837). <https://library.dbca.wa.gov.au/static/FullTextFiles/071535.pdf>
- Department of Parks and Wildlife (DPaW) (2014) Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan. Wildlife Management Program No. 58. Western Australia Department of Parks and Wildlife, now the Department of Biodiversity, Conservation and Attractions.
- Department of Primary Industries and Regional Development (DPIRD) (2017). NRInfo Digital Mapping. Accessed at <https://maps.agric.wa.gov.au/nrm-info/> Accessed September 2018. Department of Primary Industries and Regional Development. Government of Western Australia.
- Government of Australia (2009) Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Policy Statement 3.10 Significant Impact Guidelines for the vulnerable western ringtail possum (*Pseudocheirus occidentalis*) in the southern Swan Coastal Plain, Western Australia. Department of the Environment, Water, Heritage and the Arts (DEWHA), now the Department of Agriculture, Water and the Environment (DAWE). Canberra.
- Government of Western Australia (2019). 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>.
- Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Jones, B.A., How, R.A. and Kitchener, D.J. (1994). A Field Study of *Pseudocheirus occidentalis* (Marsupialia :Petauridae). II. Population Studies. Wildlife Research 21; 189-201.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mayer and Bridge (2020) Supporting Information for clearing permit application CPS 9141/1. Received by DWER on 9 December 2020 (DWER Refs: DWERDT388818; A1967052).
- Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) South West Regional Ecological Linkages Technical Report. Western Australian Local Government Association and Department of Environment and Conservation. Perth.
- Richards, G.C., Hall, L.S., and Parish, S. (photography) (2012). A natural history of Australian bats: Working the night shift. CSIRO Pub. pp. 40, 41, 159. ISBN 9780643103740.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs' Resource Management Technical Report No. 280. Department of Agriculture. Now the Department of Primary Industries and Regional Development.
- Shedley, E. and Williams, K. (2014) An assessment of habitat for western ringtail possum (*Pseudocheirus occidentalis*) on the southern Swan Coastal Plain. Unpublished report for the Department of Parks and Wildlife, Bunbury, Western Australia.
- SW environmental (2021) Western Ringtail Possum Survey. 11 Backwater Retreat, Quindalup. v20210219.docx9 March 2021.
- Thackway, R and Cresswell, I.D. (eds) (1995) An interim biogeographical regionalisation of Australia. Australian Nature Conservation Agency (now Department of Agriculture, Water and the Environment), Canberra.

van Dyck, S., and Strahan, R. (2008). 'The Mammals of Australia.' 3rd edition. Reed New Holland: Sydney. ISBN-13: 978-1877069253.

Water and Rivers Commission, 2001, Wetlands Position Statement (6 June 2001), Perth, Western Australia.

Wayne, A. (2006) Fire Management Guideline: Ngwayir (western ringtail possum). Science Division, Department of Conservation and Land Management. Now the Department of Biodiversity, Conservation and Attractions (DBCA). January 2006

Western Australian Herbarium (WAH) (1998-). FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> Accessed October 2019.

Webb, A., Kinloch, J., Keighery, G. and Pitt, G. 2016. The Extension of Vegetation Complex Mapping to Landform boundaries within the Swan Coastal Plain Landform and Forested Region of South West Western Australia. Department of Parks and Wildlife, Bunbury, WA.

2. GIS datasets

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

- 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)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

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)