GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9069/1
Permit Holder:	City of Busselton
Duration of Permit:	From 12 January 2021 to 12 January 2026

The permit holder is authorised to clear native vegetation subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear native vegetation for the purpose of road upgrades.

2. Land on which clearing is to be done

Capel-Tutunup Road reserve (PIN 11614483), Ludlow

3. Clearing authorised

The permit holder must not clear more than 10 native trees within the area cross-hatched yellow in Figure 1 of Schedule 1.

PART II – MANAGEMENT CONDITIONS

4. Avoid, minimise, and reduce impacts and extent of clearing

In determining the native vegetation authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of native vegetation;

(b) minimise the amount of native vegetation to be cleared; and

(c) reduce the impact of clearing on any environmental value.

5. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds*

and *dieback*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known dieback or weed-affected soil, mulch, fill, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

6. Fauna management – western ringtail possums

(a) In relation to the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to inspect that area immediately prior to, and for the duration of clearing activities, for the presence of western ringtail possum(s) (*Pseudocheirus occidentalis*).

(b) Clearing activities must cease in any area where fauna referred to in condition 6(a) are identified until either:

(i) the western ringtail possum(s) individual has moved on from that area to adjoining *suitable habitat*; or

(ii) the western ringtail possum(s) individual has been removed by a *western ringtail possum specialist*.

(c) Any western ringtail possum(s) individual removed in accordance with condition 6(b)(ii) must be relocated by a *western ringtail possum specialist* to a *suitable habitat* within the area(s) cross-hatched green in Figure 2 of Schedule 1, or as otherwise approved by the *CEO*.

(d) Where fauna is identified under condition 6(a), the permit holder must within 14 calendar days provide the following records to the *CEO*:

(i) the number of individuals identified;

(ii) the date each individual was identified;

(iii) the location where each individual was identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(iv) the number of individuals removed and relocated;

(v) the relevant qualifications of the *western ringtail possum specialist* undertaking removal and relocation;

(vi) the date each individual was removed;

(vii) the method of removal;

(viii) the date each individual was relocated;

(ix) the location where each individual was relocated to, recorded using a GPS unit set to GDA94, expressing the geographical coordinates in Eastings and Northings or decimal degrees; and

(x) details pertaining to the circumstances of any death of, or injury sustained by, an individual.

PART III - RECORD KEEPING AND REPORTING

7. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); and (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 4; and (f) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with condition 5.
2.	In relation to western ringtail possums	(a) Records in accordance with condition 6.

8. Reporting

The permit holder must provide to the *CEO* the records required under condition 7 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of *Phytophthora* species on native vegetation.

Term	Definition
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the CEO as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
suitable habitat (western ringtail possum)	means habitat known to support western ringtail possums (*Pseudocheirus occidentalis*) within the known current distribution of the species, typically characterised by abundant foliage, presence of suitable nesting structures such as tree hollows, as well as high canopy cover and continuity. Known habitat includes peppermint (*Agonis flexuosa*) dominated woodlands, jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) forests, riparian vegetation with a canopy of Bullich (*Eucalyptus megacarpa*) or flooded gum (*Eucalyptus rudis*), karri (*Eucalyptus diversicolor*) forests, sheoak (*Allocasuarina fraseriana*) dominated woodlands, and other stands of myrtaceous trees growing near swamps, watercourses or floodplains.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.
western ringtail possum specialist.	western ringtail possum specialist means a fauna specialist who holds a tertiary qualification specialising in environmental science or equivalent, has a minimum of two years of work experience in western ringtail possum (Pseudocheirus occidentalis) identification, surveys of western ringtail possums and capture and handling of western ringtail possums, and holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016.*

END OF CONDITIONS

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

18 December 2020

Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figure **1**).

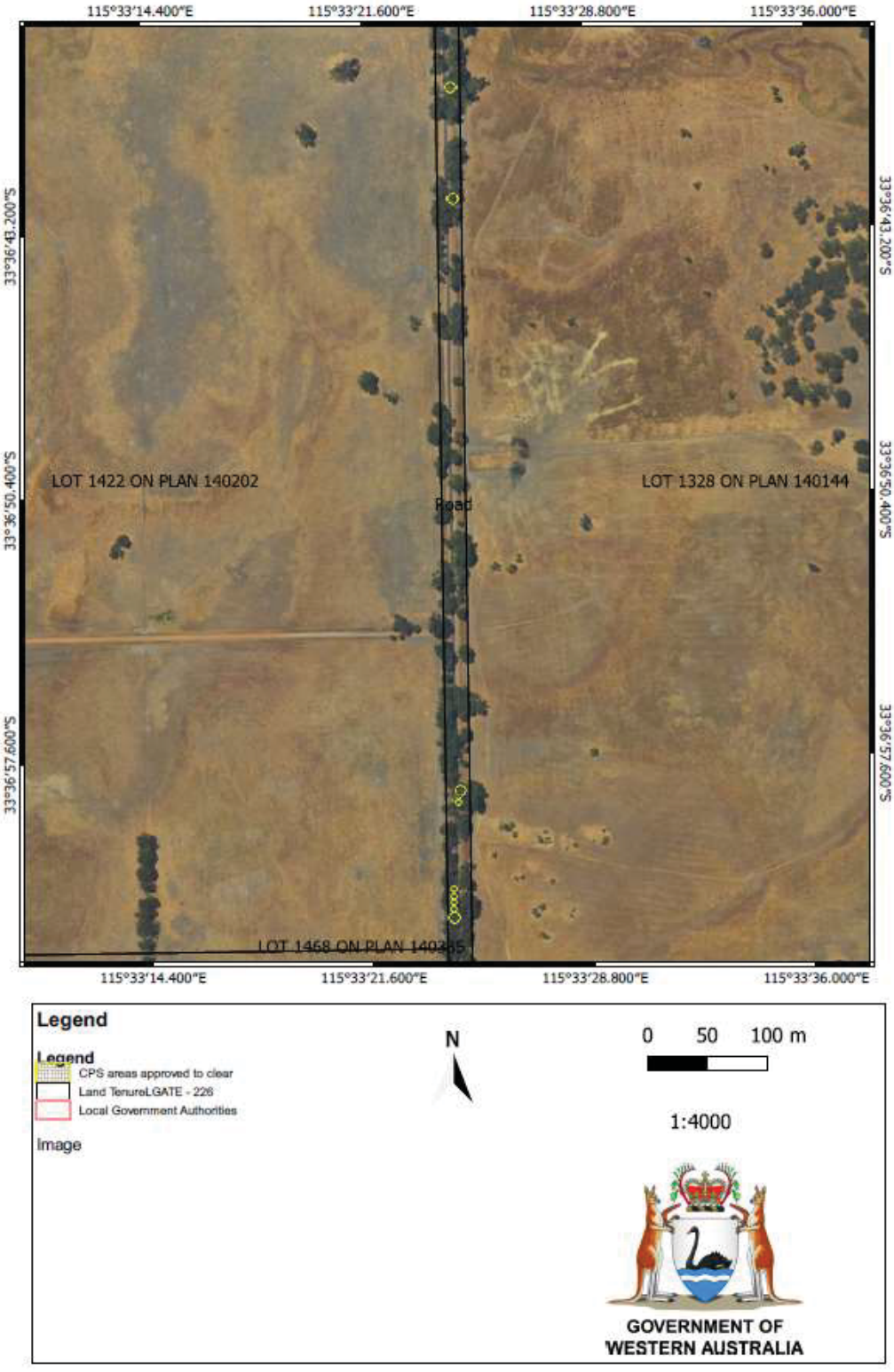

Figure 1: Map of the boundary of the area within which clearing may occur

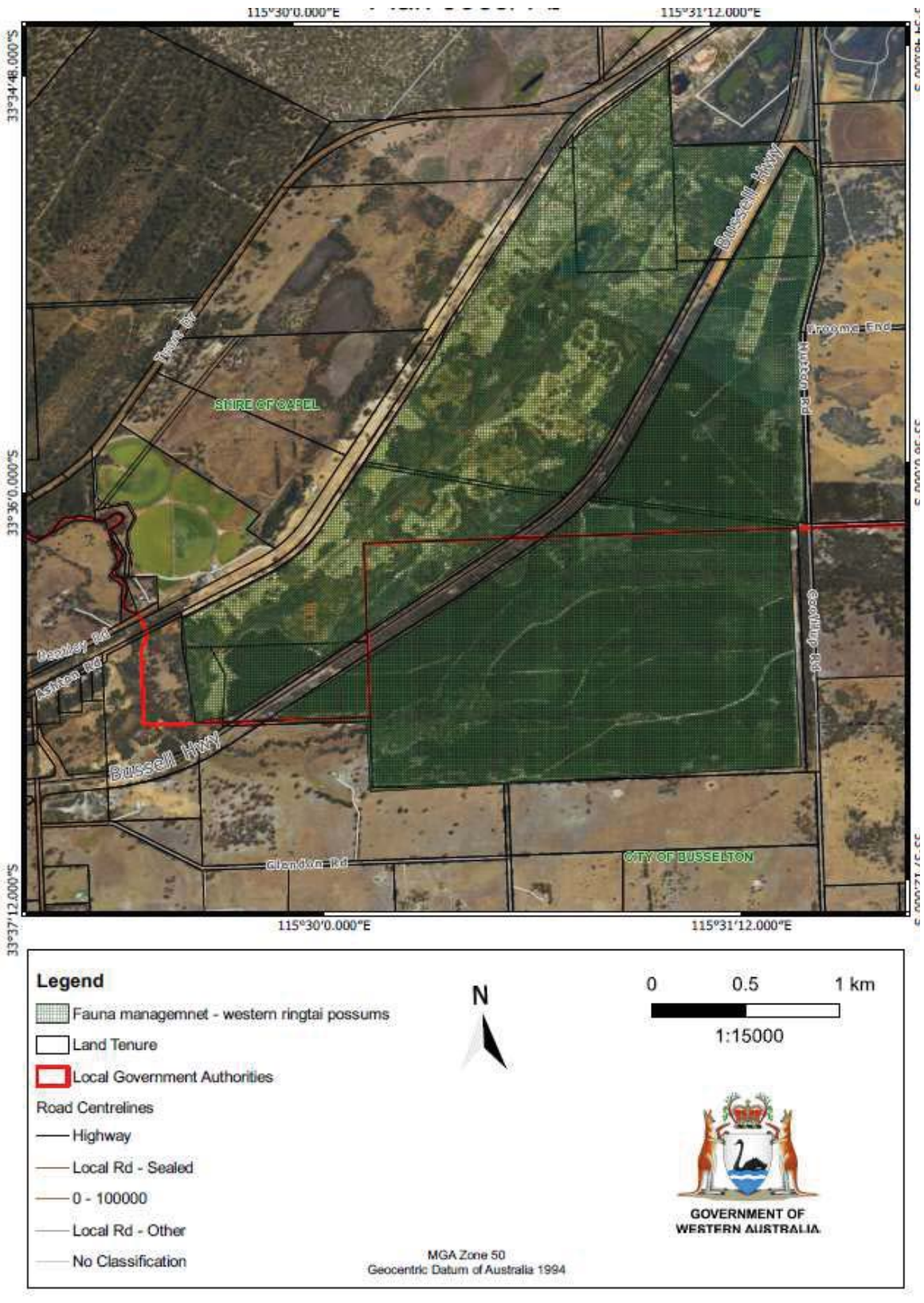

Figure 2: Suitable relocation area

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9069/1
Permit type:	Purpose permit
Applicant name:	City of Busselton
Application received:	01 October 2020
Application area:	10 native trees
Purpose of clearing:	Road construction and upgrades
Method of clearing:	Mechanical
Property:	Capel Tutunup Road reserve (PIN 11614483)
Location (LGA area/s):	City of Busselton
Localities (suburb/s):	Ludlow

1.2. Description of clearing activities

The application is to clear 10 marri (*Corymbia calophylla*) trees within Capel Tutunup Road reserve for the purpose of road widening and associated works. The trees proposed to be cleared are distributed across approximately 750 meters of road reserve (see Figure 1, Section 1.5).

1.3. Decision on application

Decision:	Granted
Decision date:	17 December 2020
Decision area:	10 native trees, 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), a summary of the findings of a flora and fauna survey and supporting information (see Appendix D), 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:

- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation (see section 3.2.1 and 3.2.2).
- the loss of a small amount of foraging habitat for black cockatoo species including forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*) and Carnaby's cockatoo (*Calyptorhynchus latirostris*).The trees do not contain breeding habitat for these species and sufficient foraging habitat remains within the road reserve.

- The loss of a small amount of foraging and breeding habitat for western ringtail possum (WRP) (*Pseudocheirus occidentalis*). The habitat is not deemed significant due to suitable habitat remaining within the road reserve. However due to the recording of an individual near the clearing area, impacts to WRP present at the time of clearing may occur. Pre-clearing inspection will mitigate any potential impacts to WRP.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to lead to an unacceptable risk to environmental values identified.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback
- pre-clearing inspection for WRP.

1.5. Site map

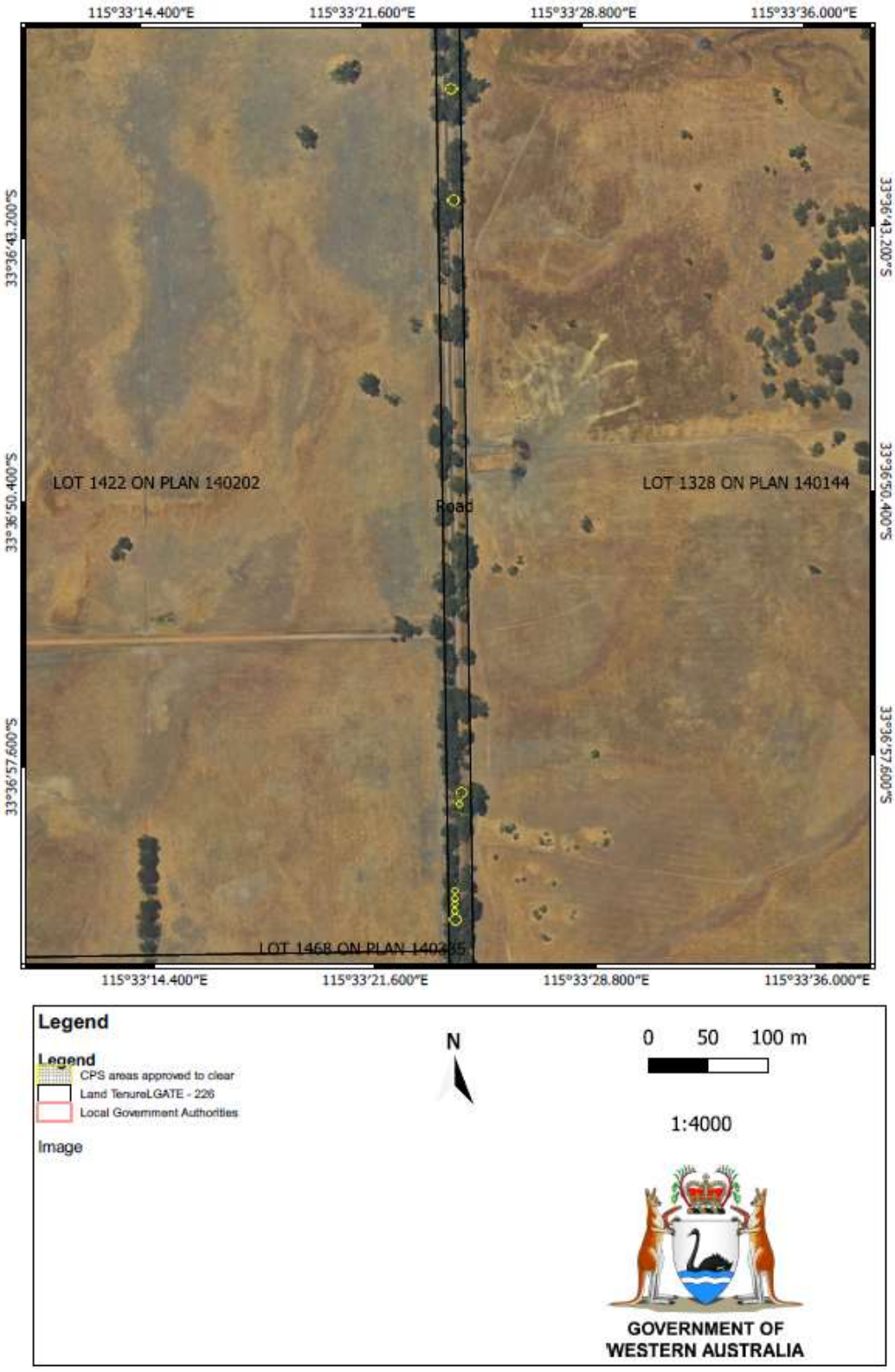

Figure 1 Map of the application area

The areas crosshatched yellow indicate the areas 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 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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC 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)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant has demonstrated the following avoidance and mitigation measures:

- The application for CPS 9069/1 replaces a previous application which was withdrawn (CPS 8421/1) which was for the proposed clearing of up to one hectare within a 6.8-hectare footprint.
- The applicant also noted that adjustments had been made to the road design with the design being narrowed in its alignment and negating roadside drains to limit the amount of clearing required.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

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 biological values (fauna) and significant remnant vegetation within an extensively cleared landscape.

The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values – Flora and Fauna - Clearing Principles a and b

Assessment

A flora and fauna survey conducted by Ecosystem Solutions (2019) extended over a three kilometre stretch of Capel Tutunup Road reserve, beyond the proposed clearing area. No threatened flora or vegetation representative of a threatened ecological community was recorded during the survey. Three Priority 4 flora species were recorded during the survey, all of which are not within the proposed clearing area. The species include:

- *Aponogeton hexatepalus,*
- *Acacia semitrullata*
- *Eucalyptus rudis* subsp. *cratyantha*

Of the three species listed above, only recordings of *Eucalyptus rudis* subsp. *cratyantha* are within close proximity of the proposed clearing. The closest recording of this species appears to be 30 meters north of the northern extent of the clearing. Recordings of the remaining Priority species are located over 500 meters south of the southern extent

of the proposed clearing, and are considered not likely to be impacted by the clearing. Whilst *Eucalyptus rudis* subsp. *cratyantha* is within 30 meters, the applicant is proposing to clear *Corymbia calophylla* trees only, and the occurrence of the P4 species will not likely be impacted.

The application area is within the modelled distribution for three species of black cockatoo and the western ringtail possum protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Biodiversity Conservation Act 2016* (BC Act*):*

- Forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*)
- Baudin's cockatoo (*Calyptorhynchus baudinii*)
- Carnaby's cockatoo (*Calyptorhynchus latirostris*)
- Western ringtail possum *(Pseudocheirus occidentalis)*

Carnaby's cockatoo and Baudin's Cockatoo are listed as endangered and forest red-tailed cockatoo is listed as vulnerable under the EPBC Act and BC Act. Black cockatoos breed in large hollow-bearing trees, generally within woodlands or forests or in isolated trees (Commonwealth of Australia, 2012). These species nest in hollows in live or dead trees of karri, marri, wandoo, tuart, salmon gum, jarrah, flooded gum, York gum, powder bark, bullich and blackbutt (Commonwealth of Australia, 2012). Potential nesting trees for black cockatoos are defined as "trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, suitable DBH is 500 millimetres" (Commonwealth of Australia, 2012).

The fauna survey identified 125 trees with a diameter at breast height (DBH) of greater than 500 millimetres within the broader Capel Tutunup Road reserve (Ecosystem Solutions, 2019). Two of these trees make up part of the application area with the remaining eight trees applied to be cleared consisting of smaller trees with DBH less than 500 millimetres. None of the trees within the application area contain hollows suitable for black cockatoos (Ecosystem Solutions, 2019).

Black cockatoos have a preference for foraging habitat that includes jarrah and marri woodlands and forest heathland and woodland dominated by Proteaceae plant species such as Banksia sp., Hakea sp. and Grevillea sp. (Commonwealth of Australia, 2012). The application area contains 10 marri trees which provide foraging habitat for black cockatoo species, with evidence of foraging (chewed marri nuts) by white-tailed cockatoo occurring within the application area (Ecosystem Solutions, 2019). Whilst the application area provides foraging habitat for black cockatoos, it is considered to be of a low quality based upon the segmented nature of clearing. Additionally, a large amount of similar habitat will remain in the road reserve and larger portions of similar or better quality habitat remain in nearby conservation areas (Coolilup State Forest, Tuart State Forest, Ludlow State Forest, Jarrahwood State Forest and Millbrook State Forest).

Roosting habitat for the three species of black cockatoos is known to exist within groups of tall trees, close to a water source, within an area of quality foraging habitat. The application area is within a line of tall trees and within 100 meters of the Ludlow River. The fauna survey searched for signs of roosting by cockatoo species, but no evidence was found (Ecosystem Solutions, 2019). While the application area has the potential to provide roosting habitat for black cockatoo species, the loss of 10 trees within the road reserve is not likely to be significant noting the amount of trees remaining within the road reserve and the likelihood of suitable roost sites being located within nearby conservation areas.

Given that no suitable breeding hollows were identified, the small size of the application area and that suitable foraging habitat will remain within the adjacent road reserve, the application area is not likely to comprise significant breeding or foraging habitat for the black cockatoo species.

The WRP is a highly arboreal nocturnal species that spends the majority of its time feeding, resting and socialising in tree canopies. WRP build nests or dreys in low shrub thickets, sedges, rushes, grass trees and within various tree canopies. Other diurnal resting sites include tree and log hollows (DBCA, 2017). While it is noted that the application area is not within the key areas known to support large populations of the species, there are numerous recordings within the local area. In addition to this, the fauna survey noted the presence of a possible drey with the road reserve (not within the application area) (Ecosystem Solutions, 2019). Noting the close home range of the species, the nearby riparian habitat and presence of a potential drey, the application area may provide habitat for this species. The habitat is not deemed significant due to suitable habitat remaining within the road reserve. However due to the recording of an individual near the clearing area, impacts to WRP present at the time of clearing may occur.

<u>Conclusion</u>
The closest recording of a Priority flora species is more than 30 meters from the proposed clearing. Noting this distance, it is not considered likely that the proposed clearing would impact on these individuals. A permit to clear

has been conditioned with weed and dieback management requirements to limit degradation of the remaining vegetation within the road reserve.

Based on the above assessment, the proposed clearing will result in a small loss of foraging habitat for black cockatoo species. Noting the number of mature trees being retained within the road reserve, the loss of foraging habitat does not constitute a significant residual impact.

The proposed clearing has the potential to impact on individual WRP if present within the application area at the time of clearing.

Conditions
To manage impacts to individual WRP, a fauna management condition has been applied to the permit requiring the inspection of the clearing area prior to clearing commencing and for the duration for the presence of WRP and actions to occur if the species is sighted.

Weed and dieback management requirements have been applied to the permit to limit degradation of the remaining vegetation within the road reserve.

3.2.2. Significant remnant vegetation and conservation areas – Clearing Principles (e)

Assessment
The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The extent of native vegetation within the local area is inconsistent with the national targets as it retains approximately 28 per cent native vegetation cover. Given this, the application area is located within an extensively cleared landscape. The application area represents approximately 0.01 per cent of the remaining vegetation within the local area and the proposed clearing will reduce the extent of native vegetation within the local area to 9122 hectares.

The application area is located within the 'Swan Coastal Plain' (SCP) Interim Biogeographic Regionalisation for Australia (IBRA) which retains approximately 39 per cent of its pre-European vegetation extent (Government of Western Australia, 2019a).

The SCP vegetation Abba complex, which has been mapped within the application area, retains approximately 6.54 per cent of its original vegetation extent. While this vegetation has been extensively cleared, the application area is dominated by *Corymbia calophylla* over weedy understorey. The vegetation within the application area may be representative of this vegetation complex, however the loss of individual trees within a degraded road reserve will not significantly impact on the occurrence of this complex.

The application area is not part of any mapped ecological linkage but may contribute to local linkage as it is surrounded by agricultural properties. It is considered that the removal of 10 trees within the road reserve is not likely to significantly impact this linkage as many other trees and vegetation will remain. In addition to this, it is noted that the remnant vegetation to the south of the application area is connected to areas in the north by a vegetated area along the Ludlow River.

Taking into account the minimal extent of the proposed clearing in a degraded (Keighery, 1994) condition and that the application area is unlikely to provide significant habitat for fauna, be a part of a significant ecological linkage or be necessary to maintain ecosystem services (such as hydrological processes), the vegetation within the application area is not considered as a significant remnant of native vegetation in an extensively cleared landscape.

Conclusion
Based on the above assessment, the Delegated Officer has determined that the proposed clearing will not significantly impact on this environmental value.

Conditions

To mitigate potential impacts from the clearing, a weed and dieback condition will be added to the permit. Weed and dieback management that requires earth-moving machinery to be clean of weeds and soil when entering and exiting the clearing area, ensure that no known weed or dieback affected soil, mulch, fill or other material is brought into the area to be cleared and restrict the movement of machines and other vehicles to the limits of the area to be cleared.

3.3. Relevant planning instruments and other matters

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

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End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is distributed along a 750 meter stretch of vegetated road reserve in the intensive land use zone of Western Australia. Aerial imagery indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 29 per cent of the original native vegetation cover.
Ecological linkage	While the proposed clearing is not within any mapped ecological linkages, it does contribute toward local linkages as surrounding properties are mostly cleared for agricultural purposes.
Conservation areas	The nearest conservation area to the application area is the Coolilup State Forest which is located over three kilometres west of the application area.
Vegetation description	Vegetation survey indicates the vegetation within the proposed clearing area consists of *Corymbia calophylla* woodland (Ecosystem Solutions, 2019). The full survey descriptions, photographs and additional maps are available in Appendix D. This appears to be a degraded remnant of the mapped vegetation type: • Abba complex, which is described as A mixture of open forest of Corymbia calophylla (Marri) - Eucalyptus marginata (Jarrah) - Banksia species and woodland of Corymbia calophylla (Marri) with minor occurrences of Corymbia haematoxylon (Mountain Marri). Woodland of Eucalyptus rudis (Flooded Gum) - Melaleuca species along creeks and on flood plains. (Shepherd et al, 2001) The mapped vegetation type retains approximately 6.5 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	Vegetation survey (Ecosystem Solutions, 2019) indicate the vegetation within the proposed clearing area is in degraded (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix C.
Climate and landform	The mean annual rainfall within the local area is recorded as 807 millimetres. The application area is approximately 25m in the north (closest to the watercourse) with a slight rise to 35 meters to the south.
Soil description	The soil is mapped as Abba wet vales Phase and Abba wet flats Phase which are described as; • Abba wet vales Phase is described as mall narrow swampy depressions along drainage lines, alluvial soils (Department of Primary Industry and Regional Development, 2019). • Abba wet flats Phase is described as winter wet flats and slight depressions with sandy grey brown duplex (Abba) and gradational (Busselton) soils (Department of Primary Industry and Regional Development, 2019).
Land degradation risk	The clearing of 10 individual trees along a 750 meter stretch of road reserve in a degraded (Keighery, 1994) condition is not likely to cause land degradation.
Waterbodies	The desktop assessment and aerial imagery indicated that the northern extent of the proposed clearing is located approximately 100 meters south of the Ludlow River.
Hydrogeography	The application area is not within any proclaimed areas under the *Rights in Water and Irrigation Act 1914* or the *Country Areas Water Supply Act*.
Flora	Databases noted 75 flora records in local area, 17 of which are threatened. The nearest record is a Priority 3 species *Adelphacme minima.* The species is known to occur in grey sand and peaty swampy areas which are not represented within the application area. Surveys submitted noted no conservation significant species within the application area.

Characteristic	Details
Ecological communities	A mapped occurrence of Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* is approximately 265 meters from the application area. The application area is not considered representative of this community or any other ecological communities.
Fauna	There are 34 records of conservation significant species within the local area. The application area may contain habitat for black cockatoo species and western ringtail possum (Appendix D)

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*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex					
Abba Complex	50,892.78	3,326.20	6.54	253.55	0.36
Local area					
10 km radius			27.9	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

A.3. Flora Analysis table

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Adelphacme minima	3	Y	Y	Y	0.2	2	Y
Andersonia ferricola	1	Y	Y	Y	4.7	5	Y
Aponogeton hexatepalus	4	Y	Y	Y	0.6	3	Y
Banksia nivea subsp. *uliginosa*	T	Y	Y	Y	4.4	11	Y
Banksia squarrosa subsp. *argillacea*	T	Y	Y	Y	3.6	16	Y
Chamelaucium roycei	T	Y	Y	Y	3.7	19	Y
Cyathochaeta teretifolia	3	Y	Y	Y	6.6	2	Y
Dillwynia sp. Capel (P.A. Jurjevich 1771)	1	Y	Y	Y	9.1	2	Y
Gastrolobium papilio	T	Y	Y	Y	9.2	11	Y
Hakea oldfieldii	3	Y	Y	Y	5.8	10	Y
Lambertia echinata subsp. *occidentalis*	T	Y	Y	Y	5.8	11	Y

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Meionectes tenuifolia	3	Y	Y	Y	3.7	5	Y
Petrophile latericola	T	Y	Y	Y	3.7	14	Y
Stylidium squamellosum	2	Y	Y	Y	4.6	1	Y
Verticordia attenuata	3	Y	Y	Y	2.8	23	Y
Verticordia plumosa var. *assensis*	T	Y	Y	Y	4.5	18	Y

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

A.4. Fauna Analysis table

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii* subsp. *naso*)	Vulnerable	Y	Y			Y
Baudin's Cockatoo (*Calyptorhynchus baudinii*)	Vulnerable	Y	Y			Y
Carnaby's Cockatoo (*Calyptorhynchus latirostris*)	Endangered	Y	Y			Y
Western ringtail possum *(Pseudocheirus occidentalis)*	Critically Endangered	Y	Y			Y

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

A.5. Land degradation risk table

Risk categories	***Land Unit 1 - Abba wet vales Phase***	***Land Unit 2 - Abba wet flats Phase***
Wind erosion	3-10% of map unit has a high to extreme wind erosion risk	10-30% of map unit has a high to extreme wind erosion risk
Water erosion	50-70% of map unit has a high to extreme water erosion risk	<3% of map unit has a high to extreme water erosion risk
Salinity	3-10 % of map unit has a moderate to high salinity risk	3-10 % of map unit has a moderate to high salinity risk
Subsurface Acidification	>70% of map unit has a high subsurface acidification risk or is presently acid	>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 hazard	<3% of the map unit has a moderate to high hazard
Water logging	>70% of map unit has a moderate to very high waterlogging risk	>70% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	>70 of map unit has a high to extreme phosphorus risk	10-30%of map unit has a high to extreme phosphorus risk

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared does not contain locally or regionally significant flora, fauna, habitats or assemblages of plants. A biological survey conducted noted no priority or threatened flora species, fauna species or ecological communities within the application area. Priority flora species have been recorded in close proximity to the application area.	Not likely to be at variance	Yes Refer to *Section 3.2.1*, above
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The area proposed to be cleared contains potential foraging and roosting habitat for conservation significant fauna, including black cockatoos and western ringtail possums.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: A survey conducted within the application area noted no threatened flora were recoded. The area proposed to be cleared is not likely to contain habitat for flora species listed under the BC Act.	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The area proposed to be cleared does not contains species that resemble a threatened ecological community listed by the Western Australian Minister for Environment.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* *Assessment:* The extent of the mapped vegetation type is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area or considered to be significant as a remnant.	May be at variance	Yes *Refer to Section 3.2.2, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: The Coolilup State forest is located more than three kilometres from the application area. Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given no water courses or wetlands are recorded within 100 meters of the application area, and the application area contains only *Corymbia calophylla*, the proposed clearing is unlikely to impact on vegetation associated with a watercourse or wetland.	Not at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: One of the mapped soil types has a high risk of water erosion, however it is noted that only a minor amount of clearing is within this soil type. Noting the extent of the proposed clearing scattered along the application area, the proposed clearing is not likely to cause appreciable land degradation.	Not likely to be at variance	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water*." Assessment: Noting the extent of the proposed clearing and the condition of the vegetation scattered along the application area, the proposed clearing is not likely to cause deterioration in the quality of surface or underground water. No watercourses or wetlands are recorded in close proximity to the application area.	Not likely to be at variance	No .
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: The 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. Given the closest watercourse is recorded over 100 meters from the application area, the proposed clearing is unlikely to contribute to waterlogging.	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

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

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

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

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

Appendix D. Biological survey information excerpts

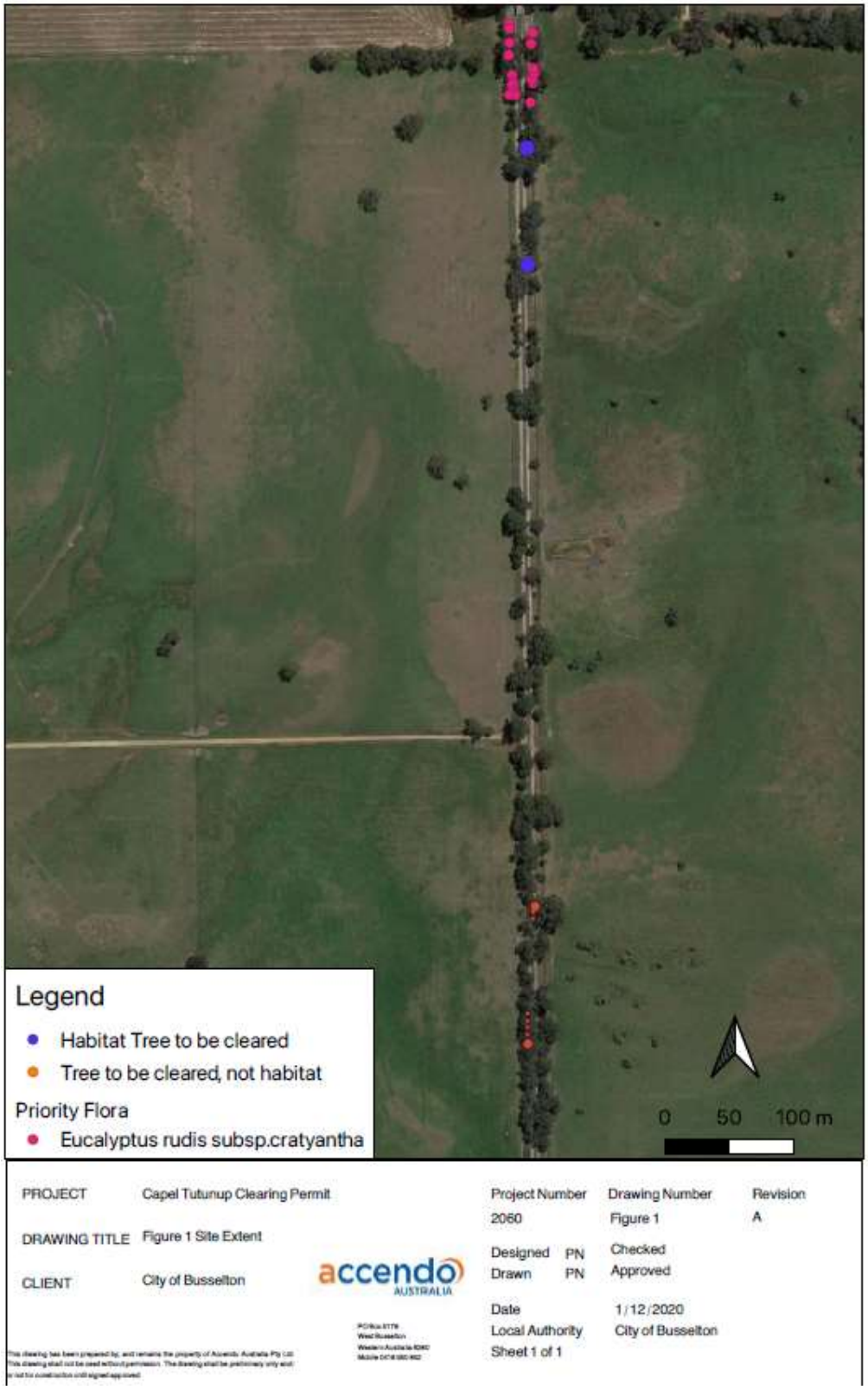

Figure 1: Accendo (2020) showing proposed clearing, priority flora and trees to be cleared over 500 millimetres

STRUCTURAL VEGETATION, FLORA – Relevé										SITE_ID: R02
Date: 12/09/2019	GPS:		3	6	6	1	8	8	E	Structural comm. type
		6	2	7	9	9	6	1	N	
Recorder: KP	Photo no. + direction:									*Corymbia calophylla* woodland
Location: 400m south of bridge										

Condition: Pristine Excellent Very Good Good **Degraded** Completely Degraded	
Aspect: N NE E SE S SW W NW **NA**	Slope: **Flat** Gentle Mod Steep
Geology: Gran **Lat** Lime Other	Rock: **0** <2 2-10 10-20 20-50 >50
Soil Colour: **Grey** Dark Brown Light Brown Orange/Brown Red/Brown White Yellow	Soil Type: C CL CLS CS L LS **S** SCL SL SP ZCL ZL ZS
Litter (% cover & depth): **Grass thatch, 100%**	Bare Ground (% cover): **0%**
Hydrology: **Good drain** Poor drain Wet all year Seas wet winter/spring	Topographic position: Upland Wetland Rock Outcrop Drainage Depression Creekline Riparian Bank Gully Plain Slope Lower Slope Middle Slope Upper Valley **Flat**

Layer	Height (m)	Cover	Plant Species (Dominant 3 first)
Tree (T2)	10-30	10 - 30	*Corymbia calophylla*
Tree (T3)	< 10	2 – 10	*Corymbia calophylla, Nuytsia floribunda*
Shrub (S1)	> 2	<2	*Nuytsia floribunda*
Shrub (S2)	1-2	<2	*Acacia extensa*
Shrub (S3)	0-1	<2	*Adenanthos meisneri, Adenanthos sericeus, Xanthorrhoea preissii, Hibbertia hypericoides*
Sedge/Rush (VR)		NA	
Herb (H)		<2	**Raphanus raphanistrum, *Sonchus asper, *Freesia laxa*
Grass (G)		>70%	**Ehrharta longiflora, *Ehrharta calycina, *Cynodon dactylon*
Other (climbers) (C)		NA	

Cover Codes: D >70% M 30-70% S 10-30% V 2-10% VV <2% E <5% Emergent * = Introduced

Figure 2: Ecosystem Solutions (2019) Data from Releve 2 located within the application area

Figure 3: Ecosystem Solutions (2019) Photograph from Releve 2 located within the application area

Figure 4: Photographs provided by the applicant (City of Busselton, 2020) of the trees to be cleared

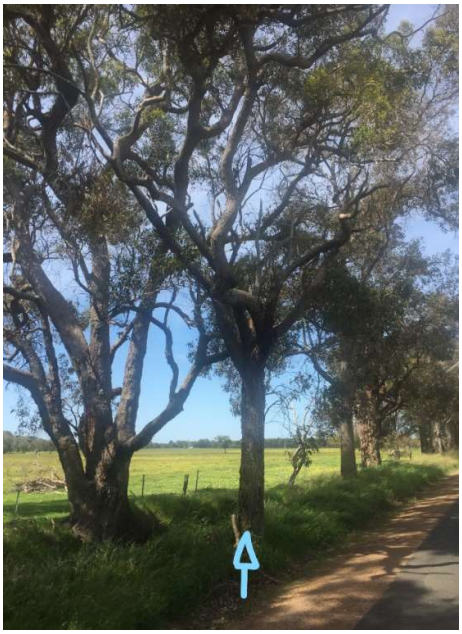

Figure 5: Photographs provided by the applicant (City of Busselton, 2020) of the trees to be cleared

Figure 6: Photographs provided by the applicant (City of Busselton, 2020) of the trees to be cleared

Figure 7: Photographs provided by the applicant (City of Busselton, 2020) of the trees to be cleared

DBH (cm)	Species	Height (m)	Easting	Northing	Notes
NATM	Rudis	20m	366118	6280131	No Hollows Observed
67	Marri	16m	366114	6280085	No Hollows Observed
85	Marri	16m	366112	6280079	No Hollows Observed
65	Marri	16m	366114	6280064	No Hollows Observed
NATM	Marri	19m	366116	6280049	No Hollows Observed
58	Marri	17m	366116	6280038	No Hollows Observed
91	Marri	15m	366118	6280030	No Hollows Observed
64	Marri	12m	366115	6280007	No Hollows Observed
65	Marri	16m	366116	6280007	No Hollows Observed
64	Marri	17m	366119	6279995	No Hollows Observed
62	Marri	17m	366117	6279988	No Hollows Observed
65	Marri	14m	366113	6279961	No Hollows Observed
71	Marri	12m	366117	6279958	Dead
60	Marri	14m	366119	6279867	No Hollows Observed
85	Marri	14m	366116	6279858	No Hollows Observed
70	Marri	15m	366116	6279851	No Hollows Observed
77	Marri	12m	366105	6279948	No Hollows Observed
57	Marri	14m	366107	6279955	No Hollows Observed
60	Marri	12m	366109	6279971	No Hollows Observed
72	Marri	19m	366103	6280037	No Hollows Observed
62	Marri	18m	366105	6280045	No Hollows Observed
69	Rudis	16m	366106	6280099	No Hollows Observed

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Figure 8: Extract from report 'Flora and Fauna Significance Assessment', Ecosystem Solutions, 2019

DBH (cm)	Species	Height (m)	Easting	Northing	Notes
62	Marri	20m	366105	6280109	No Hollows Observed
74	Rudis	17m	366103	6280123	No Hollows Observed
78	Rudis	19m	366101	6280134	No Hollows Observed
100	Rudis	15m	366105	6280140	No Hollows Observed
87	Marri	13m	366115	6279618	No Hollows Observed
85	Marri	13m	366116	6279667	No Hollows Observed
57	Marri	10m	366112	6279690	No Hollows Observed
65	Marri	15m	366112	6279699	No Hollows Observed
72	Marri	11m	366108	6279738	No Hollows Observed
63	Marri	14m	366110	6279774	No Hollows Observed
69	Jarrah	16m	366118	6279726	No Hollows Observed
72	Marri	15m	366120	6279673	No Hollows Observed
NATM	Marri	16m	366121	6279667	No Hollows Observed
69	Marri	16m	366122	6279665	No Hollows Observed
NATM	Marri	17m	366120	6279660	No Hollows Observed
59	Marri	11m	366123	6279653	No Hollows Observed
97	Marri	16m	366123	6279545	No Hollows Observed
75	Marri	16m	366123	6279536	No Hollows Observed
75	Marri	14m	366123	6279468	No Hollows Observed
60	Marri	12m	366123	6279437	No Hollows Observed
56	Jarrah	10m	366125	6279427	No Hollows Observed
61	Marri	12m	366125	6279398	No Hollows Observed

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Figure 9: Extract from report 'Flora and Fauna Significance Assessment', Ecosystem Solutions, 2019

DBH (cm)	Species	Height (m)	Easting	Northing	Notes
85	Marri	18m	366123	6279385	No Hollows Observed
59	Marri	13m	366129	6279318	No Hollows Observed
65	Marri	16m	366125	6279308	No Hollows Observed
102	Marri	14m	366126	6279296	No Hollows Observed
74	Marri	17m	366116	6279368	No Hollows Observed
91	Marri	15m	366114	6279392	No Hollows Observed
71	Marri	13m	366113	6279430	No Hollows Observed
58	Marri	14m	366116	6279484	No Hollows Observed
63	Marri	17m	366111	6279486	No Hollows Observed
67	Marri	17m	366114	6279497	No Hollows Observed
102	Marri	17m	366114	6279506	No Hollows Observed
60	Marri	17m	366112	6279535	No Hollows Observed
57	Marri	15m	366114	6279545	No Hollows Observed
58	Marri	11m	366113	6279571	No Hollows Observed
69	Marri	16m	366111	6279578	No Hollows Observed
56	Marri	15m	366110	6279578	No Hollows Observed
65	Marri	15m	366109	6279581	No Hollows Observed
89	Marri	15m	366130	6279101	No Hollows Observed
76	Marri	14m	366132	6279108	No Hollows Observed
59	Marri	14m	366127	6279115	No Hollows Observed
74	Marri	17m	366131	6279121	No Hollows Observed
73	Marri	17m	366136	6279123	No Hollows Observed

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Figure 10: Extract from report 'Flora and Fauna Significance Assessment', Ecosystem Solutions, 2019

DBH (cm)	Species	Height (m)	Easting	Northing	Notes
59	Marri	17m	366135	6279114	No Hollows Observed
66	Marri	17m	366130	6279129	No Hollows Observed
72	Marri	21m	366131	6279142	No Hollows Observed
131	Marri	17m	366130	6279155	Potential Hollows
68	Marri	6m	366130	6279172	Dead
74	Marri	15m	366122	6279156	No Hollows Observed
69	Marri	12m	366120	6279137	No Hollows Observed
62	Marri	14m	366121	6279122	No Hollows Observed
86	Marri	14m	366120	6279091	No Hollows Observed
76	Marri	10m	366124	6278675	No Hollows Observed
50	Marri	11m	366123	6278680	No Hollows Observed
59	Marri	12m	366124	6278853	No Hollows Observed
54	Marri	11m	366123	6278880	No Hollows Observed
85	Marri	15m	366121	6279035	No Hollows Observed
58	Marri	14m	366123	6279039	No Hollows Observed
53	Marri	14m	366132	6279052	No Hollows Observed
60	Marri	14m	366137	6279042	No Hollows Observed
54	Jarrah	13m	366135	6278939	No Hollows Observed
53	Marri	11m	366134	6278921	No Hollows Observed
58	Marri	12m	366136	6278869	No Hollows Observed
51	Marri	12m	366138	6278676	No Hollows Observed
63	Marri	14m	366138	6278664	No Hollows Observed

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Figure 11: Extract from report 'Flora and Fauna Significance Assessment', Ecosystem Solutions, 2019

DBH (cm)	Species	Height (m)	Easting	Northing	Notes
56	Marri	12m	366137	6278657	No Hollows Observed
67	Marri	18m	366140	6278653	No Hollows Observed
63	Marri	15m	366142	6278656	No Hollows Observed
89	Marri	13m	366143	6278653	No Hollows Observed
101	Marri	17m	366139	6278646	No Hollows Observed
94	Marri	16m	366139	6278645	No Hollows Observed
78	Marri	10m	366142	6278633	Potential Hollow
81	Marri	12m	366127	6278507	No Hollows Observed
60	Marri	11m	366155	6278262	No Hollows Observed
95	Marri	18m	366183	6278187	No Hollows Observed
82	Marri	13m	366199	6278113	No Hollows Observed
100	Marri	14m	366198	6278102	No Hollows Observed
63	Marri	13m	366241	6277898	No Hollows Observed
69	Marri	13m	366214	6277969	No Hollows Observed
64	Marri	14m	366207	6278013	No Hollows Observed
52	Marri	10m	366208	6278017	No Hollows Observed
60	Marri	14m	366190	6278100	No Hollows Observed
54	Marri	14m	366189	6278104	No Hollows Observed
68	Marri	13m	366173	6278178	No Hollows Observed
55	Jarrah	12m	366394	6277091	No Hollows Observed
86	Marri	15m	366410	6277002	No Hollows Observed
54	Marri	16m	366413	6276994	No Hollows Observed

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Figure 12: Extract from report 'Flora and Fauna Significance Assessment', Ecosystem Solutions, 2019

DBH (cm)	Species	Height (m)	Easting	Northing	Notes
76	Marri	16m	366416	6276980	No Hollows Observed
75	Marri	14m	366419	6276943	No Hollows Observed
117	Marri	14m	366420	6276938	No Hollows Observed
65	Marri	12m	366418	6276927	No Hollows Observed
67	Marri	12m	366423	6276757	Dead
78	Marri	15m	366423	6276741	No Hollows Observed
83	Marri	16m	366420	6276728	No Hollows Observed
106	Marri	15m	366424	6276709	No Hollows Observed
51	Rudis	13m	366432	6276910	No Hollows Observed
54	Rudis	13m	366430	6276913	No Hollows Observed
73	Marri	15m	366424	6276994	No Hollows Observed
74	Marri	15m	366427	6277021	No Hollows Observed
53	Marri	17m	366418	6277023	No Hollows Observed
82	Marri	14m	366414	6277035	No Hollows Observed
95	Marri	16m	366411	6277051	No Hollows Observed Potential Drey

Figure 13: Extract from report 'Flora and Fauna Significance Assessment', Ecosystem Solutions, 2019

Appendix E. Sources of information

E.6. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

E.7. References

Accendo (2020) *Supporting information for clearing permit application CPS 9069/1,* received 01 December 2020 (DWER Ref: A1964677).

City of Busselton (2020) *Clearing permit application CPS 9069/1*, received 1 October 2020 (DWER Ref: A1938962).

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

Department of Environment Regulation (DER) (2013). *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.

Department of Primary Industries and Regional Development (DPIRD) (2019). *NRInfo Digital Mapping. Department of Primary Industries and Regional Development.* Government of Western Australia. URL: https://maps.agric.wa.gov.au/nrm-info/ (accessed 30 June 2020).

Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.

Ecosystem Solutions (2019). Flora and Fauna Significance Assessment, Capel Tutunup Road. Perth (DWER Reference: A1938965)

Environmental Protection Authority (EPA) (2016). *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf.

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

Government of Western Australia (2019) *2018 South West Vegetation Complex Statistics. Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth, https://catalogue.data.wa.gov.au/dataset/dbca

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

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Schoknecht, N., Tille, P. and Purdie, B. (2004) *Soil-landscape mapping in South-Western Australia – Overview of Methodology and output*s Resource Management Technical Report No. 280. Department of Agriculture.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. https://florabase.dpaw.wa.gov.au/ (Accessed November 2020)