



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9621/1
Permit Holder:	City of Busselton
Duration of Permit:	From 02 July 2022 to 02 July 2027

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 widening and maintenance.

2. Land on which clearing is to be done

Sugarloaf Road Reserve (PIN 1165714), Cape Naturaliste
Lot 300 on Deposited Plan 49919 (Reserve 8428), Cape Naturaliste

3. Clearing authorised

The permit holder must not clear more than 0.99 hectares of *native vegetation* 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. Period of clearing

The permit holder must conduct clearing activities outside the western ringtail possum(s) breeding times. Clearing is not to be undertaken during April to July and September to November.

7. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner in a single direction towards adjacent *native vegetation* to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

8. Flora and Fauna management – translocations

Prior to clearing, the permit holder must provide to the *CEO* a copy of the flora licence and the fauna licence obtained under the *Biodiversity Conservation Act 2016* for the inadvertent take of soil stored seeds and underground tubers of *Caladenia viridescens* and translocation of western ringtail possum (*Pseudocheirus occidentalis*) individuals.

9. 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 9(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 9(b)(ii) must be relocated by a *western ringtail possum specialist* to a *suitable habitat*.
- d) Where fauna is identified under condition 9(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.

10. Retain vegetative material and topsoil, and rehabilitation

- (a) The permit holder must retain the vegetative material and topsoil removed by clearing authorised under this permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) At an *optimal time*, the permit holder must *revegetate* and *rehabilitate* the new road batters where appropriate, and any areas that are no longer required for the purpose for which they were cleared under this permit by:
 - (i) re-shaping the surface of the land that is consistent with the surrounding 5 metres of uncleared land or appropriate shape for the road design;
 - (ii) ripping the ground on the contour to remove soil compaction; and
 - (iii) laying the vegetative material and topsoil retained under Condition 10(a) on the areas prepared for *revegetation* and *rehabilitation*.

11. Vegetation and Fauna Management – Demarcation of clearing area

Prior to clearing, the permit holder shall demarcate the area authorised to clear under this permit with bunting and a shapefile recorded using a GPS unit set to GDA94, expressing the geographical coordinates in Eastings and Northings or decimal degrees.

PART III - RECORD KEEPING AND REPORTING

12. Records that must be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> (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); (e) the direction of clearing;

No.	Relevant matter	Specifications
		<p>(f) the date that the clearing area was demarcated in accordance with condition 11;</p> <p>(g) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 4;</p> <p>(h) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 5;</p> <p>(i) flora and fauna license issued under the <i>Biodiversity Conservation Act 2016</i> in accordance with condition 8; and</p> <p>(j) actions taken to manage and mitigate impacts to western ringtail possums in accordance with condition 9.</p>
2.	In relation to the revegetation and rehabilitation of areas pursuant to condition 10 of this permit:	<p>(a) the location of any areas <i>revegetated</i> and <i>rehabilitated</i>, 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;</p> <p>(b) a description of the <i>revegetation</i> and <i>rehabilitation</i> activities undertaken;</p> <p>(c) the date that the area was <i>revegetated</i> and <i>rehabilitated</i>; and</p> <p>(d) the size of the area <i>revegetated</i> and <i>rehabilitated</i> (in hectares).</p>

13. Reporting

The permit holder must provide to the *CEO* the records required under condition 12 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 <i>Environmental Protection Act 1986</i> .
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.
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

Term	Definition
	region being inspected or surveyed, or who is approved by the <i>CEO</i> as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the <i>Biodiversity Conservation Act 2016</i> .
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
optimal time	means the period from April to July for undertaking <i>revegetation</i> and <i>rehabilitation</i> activities.
rehabilitate/ed/ion	means actively managing an area containing native vegetation in order to improve the ecological function of that area
revegetate/ed/ion	means the re-establishment of a cover of <i>local provenance</i> native vegetation in an area using methods such as natural regeneration, <i>direct seeding</i> and/or <i>planting</i> , so that the species composition, structure and density is similar to pre-clearing vegetation types in that area
suitable (western possum) habitat ringtail	means habitat known to support western ringtail possums (<i>Pseudocheirus occidentalis</i>) 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 (<i>Agonis flexuosa</i>) dominated woodlands, jarrah (<i>Eucalyptus marginata</i>) and marri (<i>Corymbia calophylla</i>) forests, riparian vegetation with a canopy of Bullich (<i>Eucalyptus megacarpa</i>) or flooded gum (<i>Eucalyptus rudis</i>), karri (<i>Eucalyptus diversicolor</i>) forests, sheoak (<i>Allocasuarina fraseriana</i>) 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 <i>Biosecurity and Agriculture Management Act 2007</i> ; 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	means a <i>fauna specialist</i> who holds a tertiary qualification specialising in environmental science or equivalent, has a minimum of two years of work experience in western ringtail possum (<i>Pseudocheirus occidentalis</i>) identification, surveys of western ringtail possums and capture and handling of western ringtail possums, and holds a valid fauna licence issued under the <i>Biodiversity Conservation Act 2016</i> .

END OF CONDITIONS

A handwritten signature in black ink, appearing to read 'Mathew Gannaway', written over a horizontal line.

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

7 June 2022

Schedule 1

The boundary of the area authorised to be cleared is shown in the maps below (Figure 1a and Figure 1b).

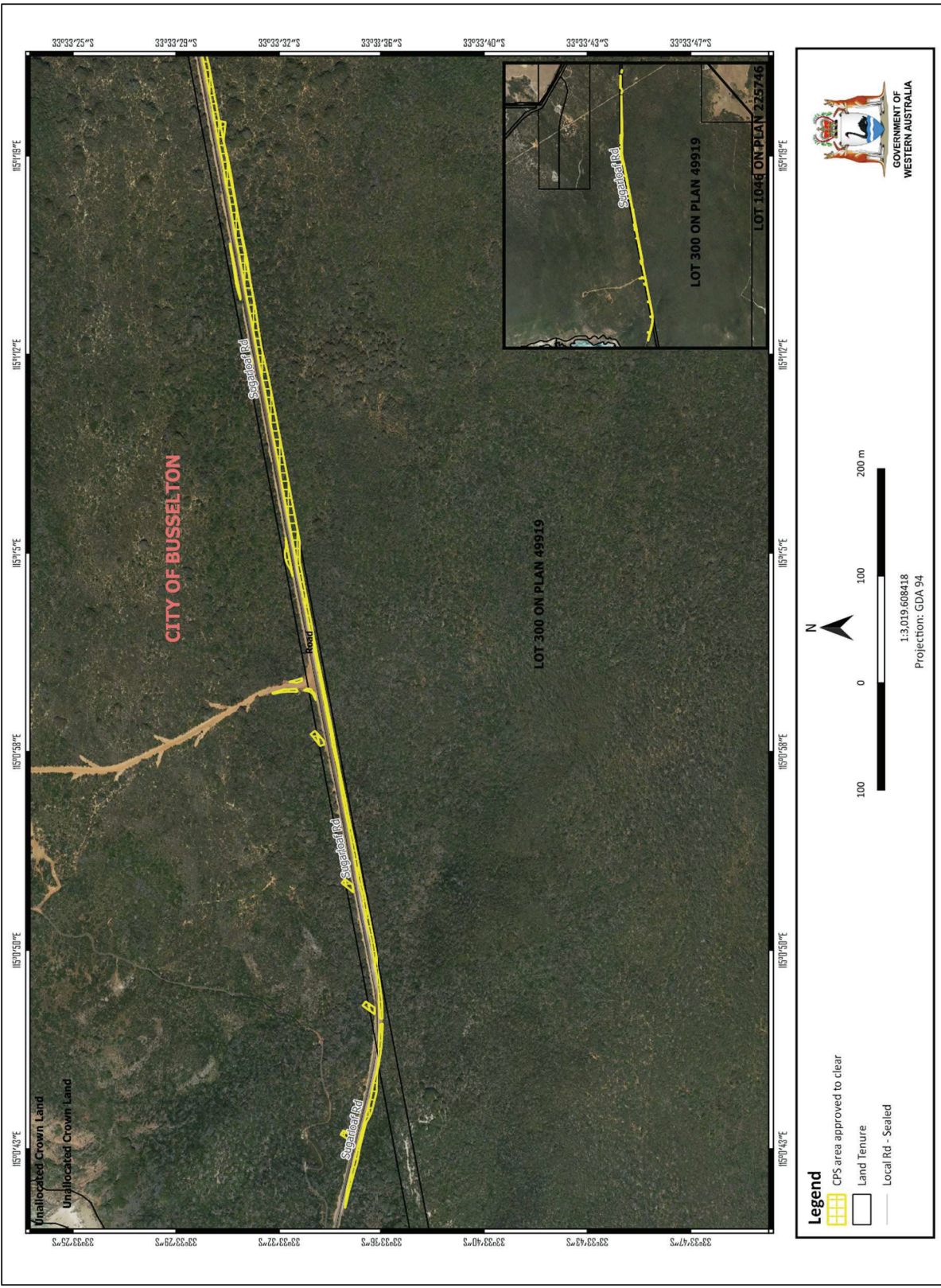


Figure 1a: Map of the boundary of the area within which clearing may occur.

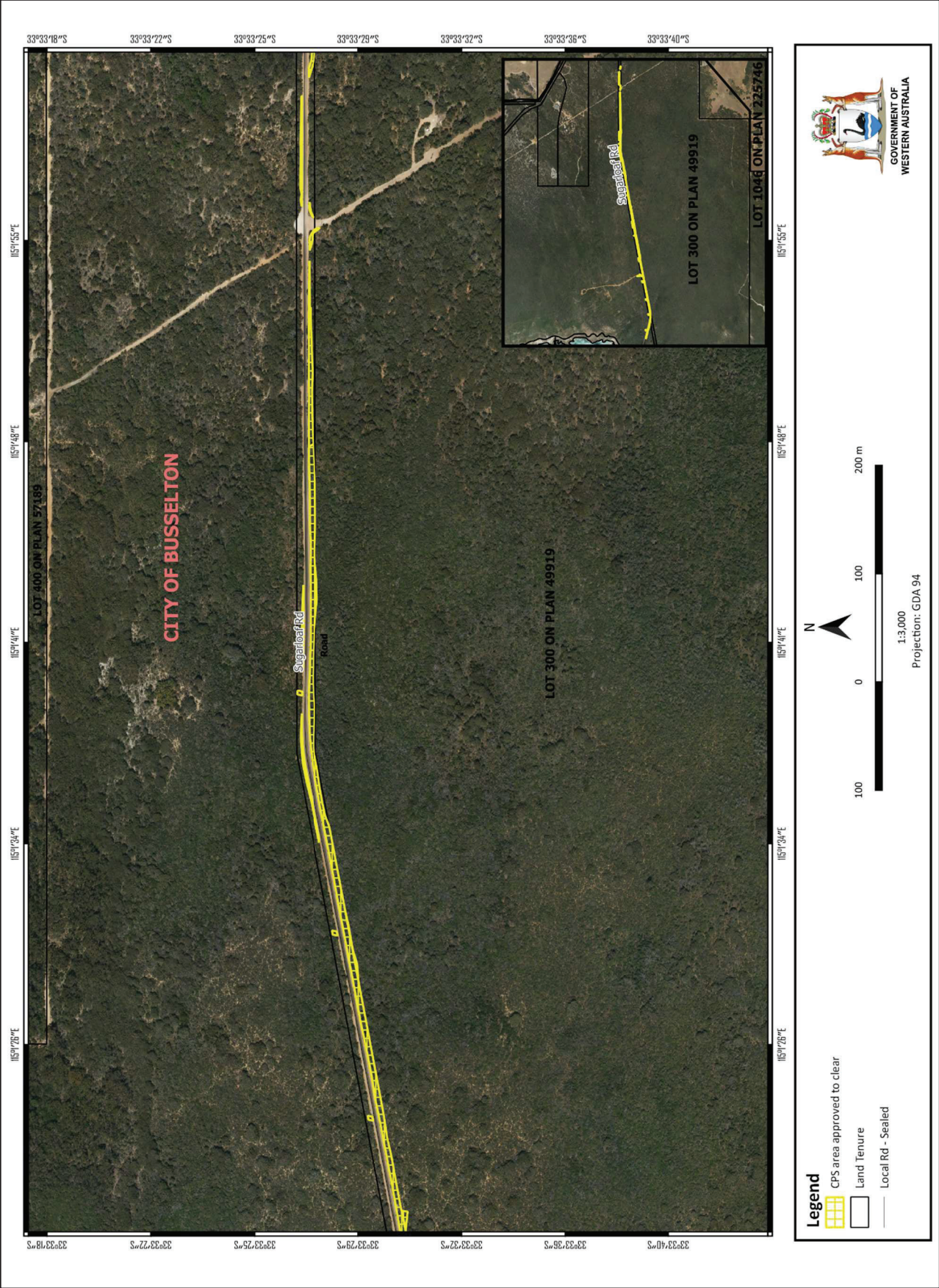


Figure 2b: Map of the boundary of the area within which clearing may occur.



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9621/1
Permit type:	Purpose permit
Applicant name:	City of Busselton
Application received:	21 February 2022
Application area:	0.99 hectares
Purpose of clearing:	Road Widening and maintenance
Method of clearing:	Mechanical Removal
Property:	Sugarloaf Road Reserve (PIN 1165714) Lot 300 on Deposited Plan 49919 (Reserve 8428)
Location (LGA area/s):	Cape Naturaliste
Localities (suburb/s):	City of Busselton

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5).

The area proposed to be cleared is an approximately 2.1-kilometre strip with clearing predominately on the southern side of the Sugarloaf Road reserve. The western end (0.052 hectares) of the application area extends into the Leeuwin Naturaliste national park tenure. The City of Busselton propose to undertake road widening and maintenance work to improve the safety of Sugarloaf Road (0.00 to 2.46 SLK) (City of Busselton, 2022b). To accommodate the work, the City of Busselton is requesting authorisation to clear up to 0.99 hectares of native vegetation in very good (Keighery, 1994) condition.

1.3. Decision on application

Decision:	Granted
Decision date:	7 June 2022
Decision area:	0.99 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and five submissions were received. Consideration of matters raised in the public submissions are summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (see 0), relevant datasets (see Appendix G.1), the findings of a flora and fauna survey (see Appendix F), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the purpose of the clearing is to

improve the safety of the standard of Sugarloaf Road, and to tie the road into the existing facilities associated with the Sugarloaf Road carpark and access.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable foraging habitat for black cockatoos;
- the loss of native vegetation that is suitable habitat for western ringtail possums;
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation in the Leeuwin-Naturaliste national park and its habitat values.

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

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

- avoid and 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;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- conduct clearing activities outside the western ringtail possum breeding times;
- engage a fauna specialist to inspect the clearing area immediately prior to, and for the duration of clearing activities for the western ringtail possum;
- utilise the mulch and topsoil from the clearing and stockpile and respread on the new road batters in autumn to encourage regrowth of native plants; and
- demarcation and bunting of clearing area to avoid unnecessary or accidental vegetation impacts to significant flora and vegetation areas.

1.5. Site maps

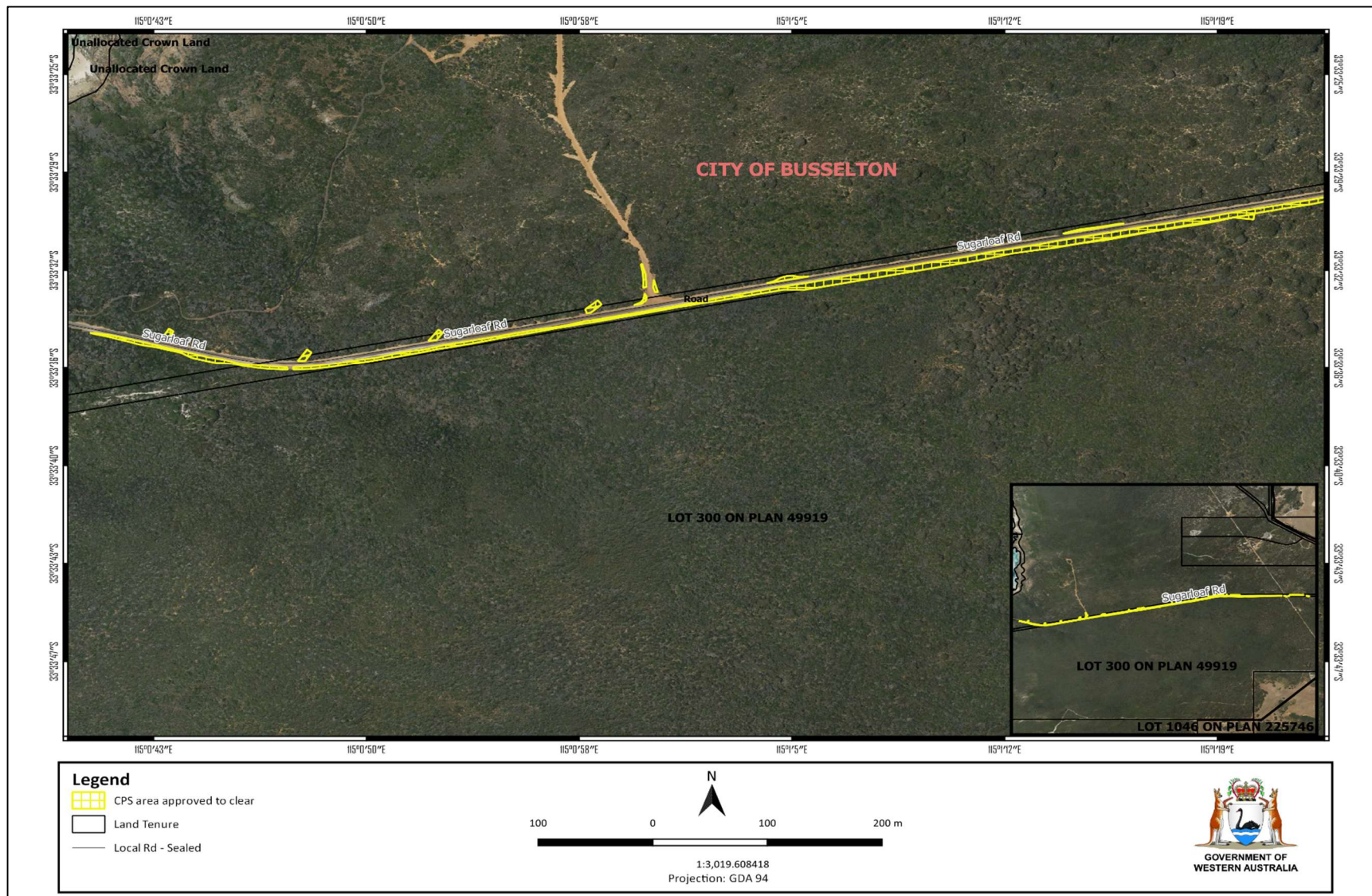


Figure 1a Map of the application area

The areas crosshatched yellow indicate the area authorised to be cleared under the granted clearing permit.

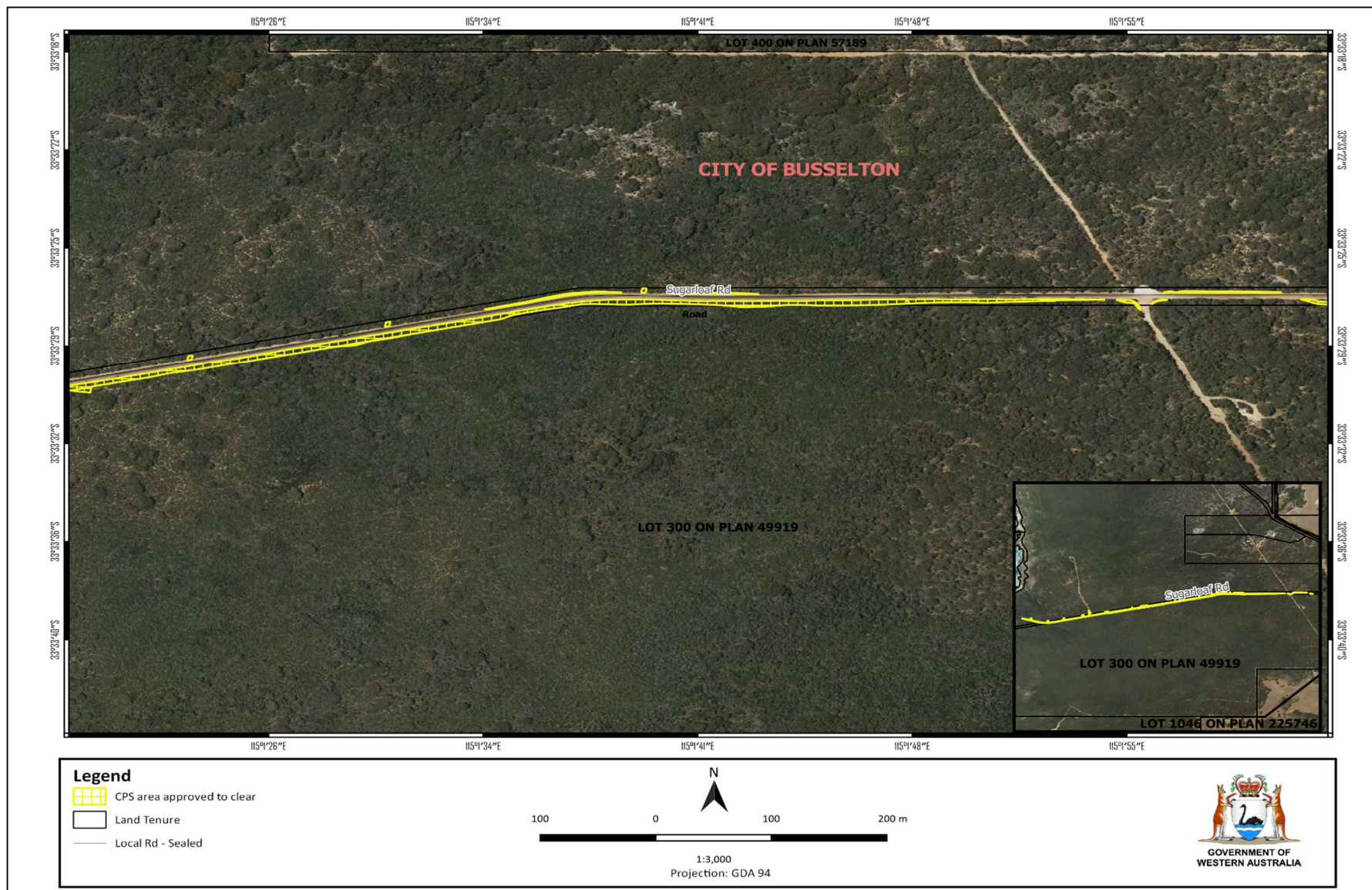


Figure 1b Map of the application area

The areas crosshatched yellow indicate the area 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)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC 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* (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

A preliminary clearing assessment (City of Busselton, 2022b) was submitted by the applicant, providing avoidance and mitigation measures considered by the City of Busselton.

The City of Busselton has stated that *“The city has progressed the project design with an emphasis on avoiding and or minimising impacts to native vegetation. Where impacts cannot be directly avoided, they will be minimised and mitigated through design measures. Potential impacts will be managed prior to and during construction through the implementation of a construction management plan”* (City of Busselton, 2022b).

To directly avoid or minimise impacts on roadside native vegetation, the City of Busselton has further considered the following design measures to reduce the area of clearing required (City of Busselton, 2022b).

- Commissioned a flora and fauna survey of Sugarloaf Road to determine the environmental constraints and to guide the project design prior to finalising the clearing area footprint.
- Site meetings were conducted with the Department of Biodiversity Conservation and Attraction (DBCA) to identify and manage site constraints. Post this meeting, the application footprint was modified to reduce the clearing by proposing the installation of additional kerbing to reduce the clearing footprint.
- Majority of the roadway will be widened to the south to limit clearing to one side of the road.
- The design pavement width has been reduced from the typical 8.2 metre width to 7.6 metres.
- The typical design batter slopes have been reduced to 1:3 from 1:4 to minimise clearing.
- The design batter slopes in steeper terrain (SLK 2.00 to SLK 2.46) have been reduced further to 1:2 to include rock pitching and minimise clearing required and erosion.
- A ‘one way’ cross fall is included in steeper retain to minimise clearing on the southern side of the roadway.

The City of Busselton will undertake the following actions during the construction period (City of Busselton, 2022b).

- Preparation and implementation of a Construction Environmental Management Plan.
- Onsite Toolbox meetings to brief construction crews on Environmental Management requirements.
- Demarcation, bunting and monitoring of significant flora and vegetation areas to avoid unnecessary or accidental vegetation impacts.
- Liaising with the Blackwood district DBCA to implement appropriate weed control, impact locations and construction controls to avoid accidental impact and mitigate overall project impacts.

The City of Busselton further plan to utilise the mulch and topsoil from the clearing and stockpile and respread on the new road batters in autumn to encourage regrowth of native plants and to ultimately reduce stormwater and wind erosion (City of Busselton, 2022b).

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 0) 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 D) identified that the impacts of the proposed clearing present a risk to biological values (fauna, adjacent flora and vegetation), conservation areas, and land and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (flora and vegetation) - Clearing Principles (a) and (c)

Assessment

The proposed application area is located within the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) region of Western Australia. Four vegetation units were identified over the survey area in which two vegetation units are mapped over the application area (SW environmental, 2020).

- ArBsAf: Closed shrubland of *Acacia rostellifera*, *Banksia sessilis* var. *cordata* (P4) and *Agonis flexuosa* over *Spyridium globulosum* and *Hibbertia* spp.
- AfSgAr: Woodland of *Agonis flexuosa* over open shrubland *Spyridium globulosum*, *Acacia rostellifera* over *Loxocarya cinerea*, *Melaleuca systema* and *Stylidium repens*.

The dominant vegetation community over the application area is the unit ArBsAf and the condition of the vegetation is predominately in very good (Keighery, 1994) condition (SW environmental, 2020).

None of the vegetation units mapped along Sugarloaf Road, with consideration of soil types, resemble a Threatened Ecological Community (TEC) or a Priority Ecological Community (PEC) known from the local area.

Flora

The desktop assessment identified seven threatened flora and 17 priority flora species within the local area. One record of threatened flora and six records of priority flora occurs within a one-kilometre radius of the application area.

Threatened flora

Based on the similarities between the soil and vegetation types within the application area, the application area may provide suitable habitat for one flora species, *Caladenia viridescens* listed as Threatened under the BC Act.

Caladenia viridescens, also known as the Dunsborough Spider Orchid is a tuberous, perennial, herb, 0.25-0.4 meters high; flowers in September to October; perennial, but persists as an underground tuber in summer. The species is associated with marri-peppermint woodland over low heath, including *Caladenia brownii*, *Xanthorrhoea* spp., *Hakea* spp., *Gastrolobium* spp. or coastal heath with *Calothamnus graniticus*, *Hakea trifurcata* and other *Caladenia* spp. over brown-grey sandy loam soil (Western Australian Herbarium, 1998). According to available DBCA datasets, the closest record of this species was mapped approximately 0.01 kilometres from the application area. Given the high likelihood of occurrence of the *Caladenia viridescens* over the application area, DWER sought advice from the DBCA.

The DBCA advised that in addition to the surveys completed by SW environmental (2022), DBCA also undertook *Caladenia viridescens* targeted surveys at this location in 2019 and 2020 and were unable to locate individuals of *Caladenia viridescens* plants. Therefore, the DBCA confirmed that the impact of the proposed clearing on this taxon is not deemed significant. However, as plants have previously occurred on site, it is possible that underground tubers and soil stored seed persist at this location. The DBCA advised that the City of Busselton apply for a section 40 authorisation under the BC Act for the inadvertent take of soil stored seed and underground tubers of *Caladenia viridescens* (DBCA, 2022). To mitigate impacts to this species, the City of Busselton will be utilising the mulch and topsoil from the clearing and stockpile and respread on the new road batters in autumn to encourage regrowth of native plants (City of Busselton, 2022b).

Caladenia viridescens was not identified over the application area during the flora and fauna survey (SW environmental, 2020). Based on the findings of the flora survey (SW Environmental, 2022) and the DBCA advice (DBCA, 2022), DWER determined that the proposed clearing is unlikely to significantly impact Threatened flora.

Priority flora

Based on the similarities between the soil and vegetation types within the application area, the application area may provide suitable habitat for four priority flora species (*Banksia sessilis* var. *cordata*, *Calothamnus graniticus* subsp. *graniticus*, *Eucalyptus marginata* x *megacarpa* and *Stylidium lowrieianum*) that were identified from the local area.

Banksia sessilis var. *cordata* (P4) is a non-lignotuberous shrub with cream and yellow flowers seen during July to October. This species is associated with communities on coastal limestone, usually peppermint over shrubland and heath including *Spyridium globulosum*, *Acacia littorea*, *Bossiaea linophylla*, *Leucopogon parviflorus*, *Hakea prostrata*, *Olearia axillaris* and *Pimelea* spp. over white-grey sand or coastal limestone (Western Australian Herbarium, 1998). The closest record of this species was mapped approximately 2.11 kilometres from the application area. Advice from the DBCA was that the proposal is unlikely to significantly impact on *Banksia sessilis* var. *cordata* given a larger subpopulation of the species occurring within the adjacent national park (DBCA, 2022). *Banksia sessilis* var. *cordata* was recorded within the ArBsAf vegetation unit mapped over the application area. This species is a fire sensitive large shrub with many populations occurring in the Leeuwin-Naturaliste (LN) national park and crown land (SW environmental, 2020). Based on the DBCA advice and the DWER assessment, the impact to this species from the proposed clearing is not deemed to be significant.

Calothamnus graniticus subsp. *graniticus* (P4) is an erect and multi-stemmed shrub, with 22 records identified within the local area. A search on florabase determined that this species occurs within heath vegetation and is associated with *Hakea*, *Leucopogon* and *Beaufortia* spp. known to grow on skeletal sandy soils and granite outcrops (Western Australian Herbarium, 1998). The closest record of this species was mapped approximately 0.46 kilometres from the application area. However, it was noted that majority of the records were identified along the coast and represented in the larger national park. Based on the above, it was determined that this species is unlikely to occur within the application area. No records were previously mapped within the application area and the flora and fauna survey also did not identify the presence of this species (SW environmental, 2020).

Eucalyptus marginata x *megacarpa* (P4) is a tree growing in sandy loam. The species is associated with interdunal vegetation, often with overstorey of *Agonis flexuosa*, sometimes with marri and banksia spp. (Western Australian Herbarium, 1998). The closest record of this species was located approximately 0.44 kilometres from the application area. The flora survey did not identify the presence of *Eucalyptus marginata* x *megacarpa* species within the application area (SW environmental, 2020). The DBCA advised that any potential secondary impacts should be mitigated to this species (DBCA, 2022). A dieback and weed management condition will be imposed on the permit to avoid potential introduction of weeds and dieback to the adjacent vegetation where the flora record is mapped.

Stylidium lowrieianum (P3), also known as Lowrie's triggerplant, is a rosetted perennial herb that flowers between October and November. This species is associated with open woodland of *Agonis flexuosa*, *Eucalyptus* spp., marri, and sheoak, over heath or low scrub including *Banksia* spp., *Acacia* spp., *Hibbertia* spp., *Spyridium globulosum* and *Xanthorrhoea preissii* (Western Australian Herbarium, 1998). The closest record of *Stylidium lowrieianum* was located approximately 0.01 kilometres from the application area. Given the flora and fauna survey was undertaken during the flowering months of this species, it is likely the survey would have identified the species if present over the application area. The survey did not identify records of *Stylidium lowrieianum* over the application area (SW environmental, 2020).

Conclusion

Based on the findings of the flora survey (SW Environmental, 2022) and the DBCA advice (DBCA, 2022), DWER determined that the proposed clearing is unlikely to significantly impact on priority flora or threatened flora species. The City of Busselton has stated and DWER highly recommend that the City will undertake demarcating, bunting and monitoring of the significant flora and vegetation areas to avoid unnecessary or accidental vegetation impacts during the proposed works (City of Busselton, 2022b).

Conditions

- Weed and dieback management measures to be implemented.
- Demarcation and bunting of significant flora and vegetation areas to avoid unnecessary or accidental vegetation impacts.
- Utilise the mulch and topsoil from the clearing and stockpile and respread on the new road batters in autumn to encourage regrowth of native plants.

3.2.2. Biological values (fauna) - Clearing Principles (b)

Assessment

The desktop assessment identified 47 conservation significant fauna species within the local area, which included 31 birds, two invertebrates, 12 mammal and two reptiles. Many of the records from the local area are migratory birds and fauna associated with the marine environment that are unlikely to occur over the application area given the absence of a watercourse or wetland (DAWE, n.d).

The City of Busselton commissioned SW Environmental (2022) to undertake a desktop assessment and ground truth fauna habitat. During the survey, factors such as habitat quality, opportunities, fauna evidence, presence or absence of water features, and habitat trees were also noted. Two key fauna habitats were identified over the application area which include acacia, banksia, peppermint shrubland to the west and peppermint woodland with shrub understorey to the east (SW environmental, 2020).

A likelihood of occurrence analysis was undertaken for the species that were identified from the local area and it was determined that the following species had a likelihood of occurrence over the proposed clearing area.

- *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo) – VU
- *Calyptorhynchus baudinii* (Baudin's cockatoo) – EN
- *Calyptorhynchus latirostris* (Carnaby's cockatoo) – EN
- *Falco peregrinus* (Peregrine falcon) – OS
- *Isoodon fusciventer* (Quenda, southwestern brown bandicoot) – P4
- *Pseudocheirus occidentalis* (Western ringtail possum, ngwayir) - CR
- *Ctenotus ora* (Coastal Plains skink) – P3

Black Cockatoos

The application area is mapped within the known distribution zones of the Endangered Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*) and the Vulnerable Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), together referred to as the black cockatoos (Commonwealth of Australia, 2012). The survey included the following measures in relation to black cockatoos (SW environmental, 2020).

- A suitable Diameter at Breast Height (DBH) tree survey – notes were taken on tree species size, and the number, height and size of hollows classified.
- Black cockatoo foraging habitat assessment to identify the amount and quality of potential black cockatoo foraging habitat.
- Roosting habitat survey to identify direct and indirect evidence of black cockatoos roosting within trees on site.

Records of the black cockatoos are known from the local area. Black cockatoo habitat can be considered in terms of breeding, roosting and foraging habitat. Suitable breeding habitat for black cockatoos includes trees which either have a suitable nest hollow or are of a suitable DBH to develop a nest hollow. For most tree species a suitable DBH is 500 millimetres (Commonwealth of Australia, 2012). The survey did not observe trees with hollows or trees likely to develop large hollows required for black cockatoo breeding (SW environmental, 2020).

Foraging habitat for Carnaby's, Baudin's and Forest red-tailed black cockatoo varies (Commonwealth of Australia, 2012). Forest red-tailed black cockatoo forages within jarrah and marri woodlands and forest, and edges of karri forests including wandoo and blackbutt, within the range of the subspecies (DBCA, 2017b). The species largely feeds on seeds of marri and jarrah, as well as other *Eucalyptus* species and *Allocasuarina* cones (Commonwealth of Australia, 2012). Baudin's cockatoos prefer foraging within eucalypt woodlands and forest, and proteaceous woodland and heath. Its diet consists mainly of seeds from marri, but Baudin's also feed on various *Banksia* spp., *Hakea* spp. and jarrah, and occasionally insects and insect larvae (DBCA, 2017a). During the breeding season (October to late January/early February) this species has a preference for marri seeds. Outside the breeding season the species may feed in fruit orchards and tips of *Pinus* spp. (Commonwealth of Australia, 2012). Carnaby's cockatoo feeds on the seeds, nuts and flowers of a large variety of plants including proteaceous species (*Banksia*, *Hakea* and *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species, marri and a range of introduced species (Valentine and Stock, 2008).

The survey identified that vegetation recorded at the site included black cockatoo foraging habitat and Baudin's and Carnaby's cockatoo feed residue were observed (chewed marri nuts) during the flora and fauna survey (SW environmental, 2020). However, given the application area is located within a road reserve and the availability of higher priority, quality foraging vegetation available throughout the Leeuwin Naturaliste (LN) national park, it is unlikely the clearing of up to 0.99 hectares of native vegetation will constitute significant residual impact on black cockatoo foraging habitat. The survey did not identify any roosting trees over the application area (SW environmental, 2020).

Western Ringtail Possum (*Isoodon fusciventer*)

Western Ringtail Possum (WRP) is listed as Critically Endangered under the BC Act, as well as the EPBC Act. According to the WRP recovery plan (DPaW, 2017), habitat critical to survival for WRP is not well understood and is therefore, based on the habitat variables observed where WRP are most commonly recorded. These appear to vary between key management zones. The common findings however are high nutrient foliage, availability for food, suitable structure for protection/nesting and canopy continuity to avoid/escape predation and other threats. Vegetation communities critical to the species include long unburnt mature remnants of peppermint (*Agonis flexuosa*) woodlands with high canopy continuity and *Eucalyptus marginata* and *Corymbia calophylla* forests and woodlands with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation and, coastal heath, bullich (*Eucalyptus megacarpa*) dominated riparian zones and karri forest (DPaW, 2017).

WRP resting sites include constructed dreys and tree hollows, with dreys constructed in the canopy when hollows are not available (Jones et al, 1994). The eastern half of the application area is mapped within a medium habitat suitability area for WRP. The WRP were observed at the survey area from two locations (in dreys) but may broadly use the whole application area periodically (SW environmental, 2020). Although the dreys were identified within the survey area, they were located approximately ten metres from the proposed clearing area on the northern side of Sugarloaf Road. Therefore, the identified dreys will not be impacted from the proposed clearing. The location of the dreys are illustrated in Appendix F. It is further considered that WRP have been observed to favour vegetation close to the edge of the road to construct dreys in, as it is generally pruned regularly, and the subsequent regrowth is often denser and bushier.

Advice from the DBCA was received in regard to the impact of the proposed clearing on WRP. The DBCA advised that clearing should be undertaken outside of the breeding period for WRP, a “fauna spotter” to be present during the clearing phase and to undertake a controlled clearing and soft falling of habitat trees (trees felled in a slow and controlled manner onto vegetation within the clearing area that is yet to be cleared) to minimise the risk of injury and allow WRP the opportunity to safely vacate if present. City of Busselton was further advised to apply for a section 40 authorisation to take and disturb WRP (DBCA, 2022).

Peppermint leaves form the basis of the WRP’s diet in coastal areas (Jones et al, 1994). The application area will provide suitable foraging habitat for WRP given majority of the application area contains peppermint trees. However, noting the long and linear nature of the proposed clearing footprint and that, there is abundant similar or better-quality vegetation available locally, much of which is reserved, the impact to WRP foraging habitat is not considered to be significant.

Significant impact to WRP from the proposed clearing is more indirect impact such as killing individuals during clearing if they were to occur over the application area. To avoid such situations, the City of Busselton must engage a fauna specialist to inspect the application area prior to, and for the duration of the clearing activities, for the presence of WRP.

Peregrine falcon (*Falco peregrinus*)

The peregrine falcon is found in most habitats, from rainforests to arid zone and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings (Birdlife, n.d). This species is widespread, highly mobile and is found in various habitats. The application area may comprise suitable habitat for this species, however, noting habitat preferences and the small extent of the proposed clearing, the application area is unlikely to comprise a significant habitat for this species.

Quenda, southwestern brown bandicoot (*Isoodon obesulus*)

The Quenda (P4), is known to inhabit scrubby, swampy vegetation with low, dense understorey, located nearby water courses, pasture, or forest/woodland that is regularly burnt and is in areas of pasture and cropland lying close to dense cover. Populations which inhabit jarrah and wandoo forests are usually associated with watercourses (DAWE, n.d). Given the absence of swampy vegetation and the absence of a watercourse nearby, it is unlikely the application will provide core habitat for Quenda. The flora and fauna survey did not identify individuals or evidence of use by Quenda, southwestern brown bandicoot over the application area (SW environmental, 2020). Given the high number of Quenda, southwestern brown bandicoot identified within the local area, the species may be a transient visitor over the application area. Noting this, it is important to undertake clearing in one direction towards adjacent native vegetation to avoid mortality of individuals.

Coastal Plains skink (*Ctenotus ora*)

The Coastal Plains skink (P3) is a reptile with the closest record identified approximately 0.82 kilometres from the application area. The most recent record of this species was identified in 2012. This is a poorly known species associated with sand dunes along the Swan Coastal Plain and is sparsely distributed (Gaikhorst et al, 2017). Noting the distribution of the species, application area being located within a road reserve and the small clearing area compared to the larger remnant vegetation within the local area, it is considered unlikely the Coastal Plains skink will occur over the application area.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of foraging habitat for the three vigilant black cockatoo species and the WRP. However, given the abundant similar foraging habitat available locally, much of which is reserved, it is unlikely the proposed clearing will result in a significant residual impact to foraging habitat for black cockatoos and WRP. The WRP and the Quenda may periodically utilise the application area.

For the reasons set out above, it is considered that the impacts of the proposed clearing on the species utilising the application area can be managed by slow directional clearing, allowing fauna to move into adjacent vegetation with the presence of a fauna specialist on site during clearing activities. It is also recommended that clearing is undertaken outside of the WRP breeding period.

Conditions

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

- Slow directional clearing to allow WRP and Quenda to move into adjacent vegetation ahead of the clearing activity to avoid mortality of individuals.
- Clearing is not to be undertaken during the WRP breeding peaks in April to July and September to November.
- Engage a fauna specialist to inspect the clearing area immediately prior to, and for the duration of clearing activities, for the presence of WRP.

3.2.3. Conservation areas - Clearing Principles (h)

Assessment

A small portion of the application area (0.052 hectares) is located within the LN national park which is an A class reserve, with the remainder of the proposed clearing occurring over the Sugarloaf Road reserve. The City of Busselton has been liaising with the DBCA in regard to undertaking clearing within the LN National Park and have been given consent and support for the proposed work. The City of Busselton has advised DWER that consultation with the DBCA is ongoing in relation to works in and adjacent to LN national park to manage project impacts (City of Busselton, 2022b).

Given the size of the proposed clearing that falls within LN national park (0.052), the linear shape of the proposed clearing area and taking into account that the local area (ten-kilometre radius) is well vegetated, the proposed clearing is not likely to significantly impact on the value of the conservation area. However, weeds and dieback could be spread by machinery during the clearing which can lead to loss of biodiversity within the LN national park. The City of Busselton consulted Great Southern Bio Logic to undertake a phytophthora dieback occurrence survey over the application area to determine the presence/absence of the disease within the remnant vegetation along Sugarloaf Road. According to the survey, majority of the application area was mapped as 'Uninterpretable' which is described as natural, undisturbed areas where susceptible plants are absent, or are too few to make a determination of the presence or absence of *Phytophthora cinnamomi*. A small section in the middle of the Sugarloaf Road was mapped as Infested by phytophthora Dieback. It is associated with a historic previous sample recovery (Great Southern Bio Logic, 2022). The City of Busselton is to prepare an Environmental Management Plan prior to commencement of clearing addressing the above impact.

The South West Regional Ecological Linkage (SWIRL) is mapped transecting vertically through the application area. Ecological linkages support the movement of fauna through the landscape and is defined as "A series of (both contiguous and non-contiguous) patches which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across a landscape" (Molly et al, 2009)

Remnant vegetation mapped within the local area accounts for approximately 62 per cent of the total land area and the selective clearing through the SWIRL is limited to one side of the road reserve with a clearing width of approximately six metres. Small forest and woodland mammals particularly sensitive to fragmentation are still likely to utilise the open area to cross between the remnant vegetation on either side of the Sugarloaf Road reserve

following the proposed clearing. Impacts at the patch and landscape scale will not be significant as a result of the proposed, linear nature of the clearing.

Conclusion

The proposed clearing may result in the potential introduction of weeds and dieback into LN national park and reduce the biodiversity of the area if not managed. Whilst it is acknowledged the proposed clearing may impact on the LN national park, given the minimal amount, selective clearing proposed and the conditions placed on the permit to minimise and mitigate the risk of the introduction and spread of weeds and dieback, it is concluded the proposal is not likely to significantly impact on the environmental values of the area.

Conditions

- The permit holder is required to take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

3.2.4. Land degradation - Clearing Principles (g)

Assessment

The soils within the application area have been mapped by the Department of Primary Industries and Regional Development (DPIRD) as two different soil units, being the Gracetown Ridge System and Cowaramup Uplands System (Schoknecht et al., 2004).

DPIRD mapping indicates that the 'Gracetown Ridge System' soil unit which covers the majority of the application area has a high risk of wind erosion and a low risk of water erosion due to the high infiltration rates associated with sands (DPIRD, 2019). Therefore, the proposed clearing may result in land degradation in the form of wind erosion. However, the impact of the proposed clearing is not likely to result in appreciable land degradation in the form of wind erosion given the extent of the proposed clearing and the linear shape of the application area.

Some short-term water erosion during the times of high rainfall may be likely during works. However, given the small, linear nature of the proposed work along with the standard erosion measures implemented during road construction, the occurrence of significant erosion is considered low. The City of Busselton advised DWER that the roadway will be kerbed in steeper terrain to minimise erosion and direct water to contour catch drains which will dissipate stormwater runoff slowly into surrounding vegetation. Mulch and topsoil from clearing will be stockpiled then respread on the new road batters to encourage regrowth of native plants and reduce stormwater and wind erosion (City of Busselton, 2022b).

Groundwater salinity within the application area has been mapped as brackish to moderately saline at between 1000-3000 milligrams per litre Total Dissolved Solids. However, given the extent of remnant vegetation surrounding the application area and the relatively small amount of clearing proposed, it is not likely the proposed clearing will cause land degradation through salinity.

Conclusion

Based on the above, the proposed clearing will not lead to appreciable land degradation. Respreading of mulch and topsoil on the new road batters will further minimise any potential impacts.

Condition

- Mulch and topsoil from clearing will be stockpiled then respread on the new road batters to encourage regrowth of native plants and reduce stormwater and wind erosion

3.3. Relevant planning instruments and other matters

The western end of the application area falls within the LN national park. The City of Busselton has received authorisation from the DBCA to access and undertake works within the nature reserve. The DBCA supports the City of Busselton's intention to upgrade Sugarloaf Road, and the proposed dimensions to be used. The City of Busselton has stated that consultation with the DBCA is ongoing in relation to works in and adjacent to LN National Park to manage potential project impacts (City of Busselton, 2022b).

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

End

Appendix A. Additional information provided by applicant

Information	Description
Flora and Fauna Survey (SW environmental, 2020)	A Flora and Fauna Survey equivalent to a Level one survey was compiled by SW environmental, 2022. The survey included desktop, reconnaissance, and targeted surveys, in accordance with EPA Technical Guidance (EPA, 2016) and other relevant State and Commonwealth guidelines. The fauna component is restricted to terrestrial vertebrate fauna. Threatened aquatic fauna and invertebrates were considered through desktop assessment only. The field survey was completed on 25 October and 8 November 2019 (SW Environmental, 2020).
Phytophthora Dieback occurrence survey (Great Southern Bio Logic, 2022)	An operational scale survey was undertaken by a DBCA registered disease interpreter (Reg. No. DPWPDI-018) and included visual diagnosis of the disease within areas of assessable remnant vegetation within the survey area. The field survey was completed on 31 January 2022 (Great Southern Bio Logic, 2022).
Preliminary Clearing Assessment (PCA) (City of Busselton, 2022b)	The City of Busselton submitted a PCA outlining avoidance and mitigation measures considered by the City of Busselton and undertook an assessment of the application area against the ten clearing principles (City of Busselton, 2022b).

Appendix B. Details of public submissions

Summary of comments/Questions from public submissions	Consideration of comment
<p>Summary comment 1:</p> <p>“What is the future use of the upgraded road? If there is consideration of increased access to larger vehicles (cf tourist buses) then what are the implications downstream of resource and environmental sustainability at the Sugarloaf environment. Early consideration of such a scenario and its implications is strongly recommended to protect this fragile ecosystem from the many impacts of increased visitor numbers (Submission, 2022c; 2022d).”</p>	<p>The public concern in regard to the future use of the road was raised with the City of Busselton and the City has responded with the following response.</p> <p>“Sugarloaf Road is the main public access road to Sugarloaf Rock and coastal areas of LN National Park, which are significant local tourist attractions drawing approximately 24,000 vehicle movements per year. The Sugarloaf Rock Carpark and western extent (500m) of Sugarloaf Road are within gazetted National Park land managed by DBCA. The Carpark currently supports visitations from larger vehicles and tourist buses.</p> <p>The remaining circa 2300m of Sugarloaf Road section is under the care and responsibility of the City of Busselton. The City does not propose to alter the type of use, or frequency of visitors along Sugarloaf Road but does have a responsibility to maintain the safety and efficacy of local road infrastructure. An upgrade is required not only for safety and efficacy of the road but also to ensure the Local Government Road section ties in with the existing infrastructure at Sugarloaf Rock. Furthermore, the nature of the road upgrade and associated drainage works will minimise maintenance and current uncontrolled scouring into the vegetation (City of Busselton, 2022c)”</p>
<p>Summary comment 2:</p> <p>“Specific vegetation along the road verges are old, coastal vegetation, well established and fragile given the tough conditions. Regrowth would likely be limited. No targeted effort for retaining these specimen plants has been made clear (Submission, 2022a).”</p>	<p>The public concern in regard to the comment was raised with the City of Busselton and the City has responded with the following response.</p> <p>“The project footprint has been subject to several design changes and on-site discussions with the DBCA to absolutely minimise the clearing proposed. As the project infrastructure will be micro-sited and only vegetation cleared to directly allow for the installation of infrastructure, opportunities for regrowth in cleared areas will be limited. Small areas of exposed soils (e.g. retention basins) will be stabilized with mulch, derived from the vegetation cleared onsite. The design is such that where possible clearing will be to the south side of the road to limit disturbance to existing road batters on the north side. Clearing requirements have been minimised by steepening some design batters where possible” (City of Busselton, 2022c).</p>
<p>Summary comment 3:</p> <p>“The City of Busselton has not demonstrated that Sugarloaf Road is indeed dangerous or will become so. To do so, the city must provide data on accidents and incidents, and whether the cause of any of these is poor road design or condition (Submission, 2022c).”</p>	<p>The public concern in regard to the comment was raised with the City of Busselton and the City has responded with the following response.</p> <p>“This road reconstruction project has been funded under the state Black Spot program. The Black Spot Program directly targets roads with a proven crash history or locations identified as high-risk. Funding for the program is mainly focused on the most cost-effective treatment of hazardous road locations. The occurrences of crashes and existing narrow road layout, high tourist traffic, east-west facing road and undulating terrain has been identified as high risk and secured funding to address these concerns” (City of Busselton, 2022c).</p>

Summary of comments/Questions from public submissions	Consideration of comment
<p>Summary comment 4: “City of Busselton’s consideration of alternative options to mitigate the dangers present such as reducing the speed of drivers through adjusted speed limits and traffic calming features as these measures will reduce the clearing required (Submission, 2022e).”</p>	<p>The public concern in regard to the comment was raised with the City of Busselton and the City has responded with the following response. “The City of Busselton has a responsibility to maintain the safety and efficacy of local road infrastructure. In order for the City to apply to Main Roads WA for a speed limited (sign posted) road a centrelined, two laned road is required. The current design will enable the City to apply to Main Road WA (MRWA) to appropriately speed zone Sugarloaf Road upon completion of the reconstruction works” (City of Busselton, 2022c).</p>
<p>Summary comment 5: Potential for the threatened species, <i>Caladenia viridescens</i> to be located over the application area given the flora survey was not undertaken during the species optimal flowering period (Submission, 2022b; 2022c; 2022d; 2022e).</p>	<p>DWER sought DBCA advise in regard to the threatened species, <i>Caladenia viridescens</i>. The impact from this proposal to this species was not deemed to be significant by the DBCA. The City of Busselton will apply for a section 40 authorisation for the inadvertent take of soil stored seed and underground tubers. For further information, see section 2.2.1.</p>
<p>Summary comment 6: <i>Banksia sessilis</i> var. <i>cordata</i> (P4) plants and other conservation significant flora species that occur within, or in close proximity to, the clearing footprint should be clearly marked, and their removal avoided if possible (Submission, 2022c; 2022d; 2022e).</p>	<p>Based on the DBCA advise and the DWER assessment, the impact to <i>Banksia sessilis</i> var. <i>cordata</i> (P4) and other conservation significant flora species that occur within the local area from the proposed clearing is not deemed to be significant. See section 2.1 for avoidance, minimisation and mitigation measures implemented by the City of Busselton. See section 2.2.1 for further explanation on the impact to flora species.</p>
<p>Summary comment 7: Impact from introduction or spread of dieback during road works (Submission, 2022d; 2022e).</p>	<p>A condition to undertake weed and dieback management is imposed on the clearing permit. The Consultation with the DBCA by the City of Busselton is ongoing in relation to works in and adjacent to LN National Park to manage project impacts (City of Busselton, 2022b).</p>

Appendix C. Site characteristics

C.1. 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 the assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix D.

Characteristic	Details
Local context	<p>The area proposed to be cleared is an approximately 2.1-kilometre linear area and comprise most of the length of Sugarloaf Road. This is the main access road to Sugarloaf Road within the Cape Naturaliste section of the Leeuwin-Naturaliste national park. The application area is surrounded by the Leeuwin-Naturaliste national park from all directions, located within the north-western tip of the Southern Jarrah Forest Sub-region of Jarrah Forest IBRA region.</p> <p>Aerial imagery and Spatial data indicates the local area (ten-kilometre radius from the centre of the area proposed to be cleared) retains approximately 62 per cent of the original native vegetation cover.</p>
Ecological linkage	<p>A mapped South West Regional Ecological Linkage transects the application area. These linkages act as stepping stones of high quality habitat thereby, facilitating the maintenance of ecological processes and the movement of organisms within, and across a landscape (Molly et al, 2009).</p>
Conservation areas	<p>The western end of the application area is mapped within the Leeuwin-Naturaliste national park which is an A class nature reserve.</p>
Vegetation description	<p>Photographs supplied by the applicant and the flora and fauna survey indicate the vegetation within the proposed clearing area consists of two vegetation units (SW environmental, 2020).</p> <ul style="list-style-type: none"> ArBsAf: Closed Shrubland of <i>Acacia rostellifera</i>, <i>Banksia sessilis</i> var. <i>cordata</i> (P4) and <i>Agonis flexuosa</i> over <i>Spyridium globulosum</i> and <i>Hibbertia</i> spp. AfSgAr: Woodland of <i>Agonis flexuosa</i> over open shrubland <i>Spyridium globulosum</i>, <i>Acacia rostellifera</i> over <i>Loxocarya cinerea</i>, <i>Melaleuca systema</i> and <i>Stylidium repens</i>. <p>Representative photos and the full survey descriptions and maps are available in Appendix F.</p> <p>The mapped vegetation types over the application area include:</p> <ul style="list-style-type: none"> Cowarup vegetation complex 41, described as open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i>, <i>Corymbia calophylla</i>, <i>Banksia grandis</i> on lateritic uplands in perhumid and humid zones (Shepherd et al, 2001). Gracetown vegetation complex 126, described as closed heath of <i>Olearia axillaris</i>, <i>Rhagodia baccata</i>, <i>Agonis flexuosa</i> on seaward slopes in hyperhumid to humid zones. Beard vegetation association 1180, described as shrublands of <i>Calothamnus quadrifidus</i> and <i>Hakea trifurcata</i> (Cape Naturaliste). Beard vegetation association 23, described as low woodland of jarrah-banksia. <p>The mapped vegetation types retain more than 30 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Photographs supplied by the applicant and the flora and fauna survey (SW environmental, 2020) indicate the vegetation within the proposed clearing area is in very good (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix E.</p> <p>Representative photos, the full survey descriptions and mapping are available in Appendix F.</p>

Characteristic	Details
Climate and landform	<p>The southwest of WA has a Mediterranean climate with mild wet winters and hot dry summers. The average annual rainfall received over the application area is 798.3 millimetres, with most of the rain falling between June and August (SW environmental, 2020).</p> <p>The application area falls within the following landforms (DPIRD, 2019):</p> <ul style="list-style-type: none"> • Gracetown exposed slopes Phase; described as moderate slopes with gradients 10 to 15 per cent but are sometimes gentler or steeper. Often the foot slopes flatten out 50 metres before the cliffed coastline and limestone outcrops occurs in some areas. • Cowaramup flats Phase; described as level to undulating plains on the plateau surface with slopes ranging from zero to two per cent gradient. There are some small patches of slight lateritic rises or knolls with occasional granitic outcrops present. Although not swampy, this unit is subject to perched water tables, 10 to 15 centimetres deep in the winter months.
Soil description	<p>The soil over the application area is mapped as (DPIRD, 2019):</p> <ul style="list-style-type: none"> • Yellow deep sands with some yellow-brown shallow sands on Gracetown exposed slopes Phase • Loamy gravels, duplex sandy gravels, semi-wet soils and grey deep sandy duplexes on Cowaramup flats Phase
Land degradation risk	<p>The mapped soils over the application area are highly susceptible to subsurface acidification and wind erosion (DPIRD, 2019).</p> <p>The land degradation table C.5. below outlines the land degradation risk levels for both the Gracetown exposed slopes phase and the Cowaramup flats Phase.</p>
Waterbodies	<p>The application area is mapped over the Leeuwin hydrological zone of Western Australia and the Busselton Coast catchment.</p> <p>The desktop assessment and aerial imagery indicated that no watercourses and wetlands transect the area proposed to be cleared. The application area is mapped 0.5 kilometres east of the coast.</p>
Hydrogeography	<p>The application area falls within the Cape to Cape North Surface Water Area and the Busselton-Capel groundwater area as proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act).</p> <p>The application area is not subject to an area protected under the <i>Country Water Supply Act 1917</i> or a Public Drinking water source area.</p> <p>The groundwater salinity level (Total Dissolved Solids) is mapped as 1000-3000 milligrams per litre.</p>
Flora	<p>The desktop assessment identified 24 conservation significant flora within the local area which comprise of seven threatened flora and 17 priority flora taxa. The closest species recorded was the threatened <i>Caladenia viridescens</i> located approximately five metres from the application area.</p>
Ecological communities	<p>No conservation significant ecological communities are mapped over the application area. The closest ecological community is a Priority one Granite community dominated by the shrubs <i>Calothamnus graniticus</i> subsp. <i>graniticus</i>, <i>Acacia cyclops</i>, <i>A. saligna</i>, <i>Hakea oleifolia</i>, <i>H. prostrata</i> and <i>Jacksonia furcellata</i> (Sugar Loaf Rock) located approximately 60 metres north of the application area.</p>
Fauna	<p>The desktop assessment identified 47 conservation significant fauna species within the local area which include 31 birds, two invertebrates, 12 mammals and two reptiles. The closest records of the conservation significant fauna species was the <i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo) recorded 0.01 kilometres from the application area.</p>

Characteristic	Details
	The local area includes seven black cockatoo roost sites, and the application area is located within the distribution zone of the three vigilant black cockatoos. The eastern half of the application area is mapped within an area considered medium suitability for Western Ringtail Possum habitat.

C.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*					
Jarrah Forest	4,506,660	2,399,838	53.25	1,673,614	37.14
Beard Vegetation association					
Beard vegetation association 1180 *	1,992	1,868	93.74	1,527	76.65
Beard vegetation association 23 *	3,091.33	2,860.33	92.53	2,608	84.38
SWF vegetation complex					
Gracetown 126	5,064	4,791	94.61	4,182.96	82.60
Cowaramup 41	13,692	4,442	32.45	863	6.30
Local area					
10km radius	~8,015	4,986	~62	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

C.3. Flora analysis table

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

Species name	Conservation status	Suitable habitat? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Did survey identify? [Y, N,]
Threatened					
<i>Caladenia busselliana</i>	T	N	7.45	1	N
<i>Caladenia caesarea</i> subsp. <i>maritima</i>	T	N	2.29	16	N
<i>Caladenia excelsa</i>	T	N	6.57	10	N
<i>Caladenia huegelii</i>	T	N	4.49	2	N
<i>Caladenia viridescens</i>	T	Y	0.01	15	N
<i>Eucalyptus x phylacis</i>	T	Y	1.80	14	N
<i>Wurmbea calcicola</i>	T	N	2.37	6	N

Species name	Conservation status	Suitable habitat? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Did survey identify? [Y, N,]
Priority flora					
<i>Acacia lateritica</i> var. <i>Glabrous</i> variant (B.R. Maslin 6765)	P3	N	1.80	5	N
<i>Amphidium tortuosum</i>	P1	N	3.80	1	N
<i>Austrostipa mundula</i>	P3	N	0.16	1	N
<i>Banksia sessilis</i> var. <i>cordata</i>	P4	Y	2.11	7	Y
<i>Boronia</i> sp. <i>Leeuwin</i> (J. Scott 235)	P2	N	0.83	1	N
<i>Boronia tenuis</i>	P4	N	2.51	3	N
<i>Caladenia nivalis</i>	P2	Y	0.37	5	N
<i>Calothamnus graniticus</i> subsp. <i>graniticus</i>	P4	Y	0.46	22	N
<i>Calothamnus graniticus</i> subsp. <i>leptophyllus</i>	P4	N	2.81	1	N
<i>Eucalyptus marginata</i> x <i>megacarpa</i>	P4	Y	0.04	3	N
<i>Eucalyptus rudis</i> subsp. <i>cratyantha</i>	P4	N	1.71	5	N
<i>Eucalyptus virginea</i>	P4	N	5.75	9	N
<i>Millotia tenuifolia</i> var. <i>laevis</i>	P2	N	1.80	1	N
<i>Olearia strigosa</i>	P3	N	7.73	1	N
<i>Stylidium lowrieianum</i>	P3	Y	0.01	7	N
<i>Tetratheca parvifolia</i>	P3	N	1.46	2	N
<i>Thelymitra variegata</i>	P2	N	5.34	1	N

C.4. Fauna analysis table

Migratory birds, marine species (including Albatrosses) have not been included within the following table given no watercourses are present over the application area. Remaining fauna species identified from the local area are given further consideration.

Species Scientific name	Species common name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Year of the most recent record
BIRD						
<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	VU	Y	4.23	4	2015
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	EN	Y	1.25	38	2017
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	EN	Y	0.01	28	2018
<i>Calyptorhynchus</i> sp. 'white-tailed black cockatoo'	White-tailed black cockatoo	EN	Y	1.90	32	2018
<i>Falco peregrinus</i>	Peregrine falcon	OS	Y	2.35	5	2011
<i>Leipoa ocellata</i>	malleefowl	VU	N	2.52	1	-
<i>Ninox connivens connivens</i> (southwest subpop.)	barking owl (southwest subpop.)	P3	N	0.97	1	1995
<i>Phaethon rubricauda</i>	Red-tailed tropicbird	P4	N	0.08	31	2007
<i>Puffinus huttoni</i>	Hutton's shearwater	EN	N	0.31	5	2014
<i>Stercorarius antarcticus lonnbergii</i>	Brown Skua, Subantarctic skua	P4	N	2.19	2	2014
<i>Thinornis rubricollis</i>	Hooded plover, hooded dotterel	P4	N	1.76	11	2005

Species Scientific name	Species common name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Year of the most recent record
MAMMAL						
<i>Dasyurus geoffroii</i>	chuditch, western quoll	VU	N	2.31	2	1974
<i>Falsistrellus mackenziei</i>	Western false pipistrelle, western falsistrelle	P4	N	3.42	2	2014
<i>Isodon fusciventer</i>	Quenda, southwestern brown bandicoot	P4	Y	1.40	56	2017
<i>Notamacropus eugenii derbianus</i>	Tammar wallaby	P4	N	2.82	2	-
<i>Notamacropus irma</i>	western brush wallaby	P4	N	1.82	6	2005
<i>Phascogale tapoatafa wambenger</i>	south-western brush-tailed phascogale, wambenger	CD	N	1.91	12	2020
<i>Pseudocheirus occidentalis</i>	Western ringtail possum, ngwayir	CR	Y	0.02	644	2020
<i>Setonix brachyurus</i>	Quokka	VU	N	2.82	6	1979
REPTILE						
<i>Ctenotus delli</i>	Dell's skink, Darling Range Southwest Ctenotus	P4	N	1.71	2	1994
<i>Ctenotus ora</i>	Coastal Plains skink	P3	Y	0.82	18	2012

C.5. Land degradation risk table

Risk categories	Land Unit: 216GrGTEe	Land Unit: 216CoCO1
Wind erosion	H2: 99% of map unit has a high to extreme hazard	H2: 73% of map unit has a high to extreme hazard
Water erosion	M1: 29% of map unit has a very high to extreme hazard	L1: 0% of map unit has a very high to extreme hazard
Salinity	L1: 0% of map unit has a moderate hazard	L1: 0% of map unit has a moderate hazard
Subsurface Acidification	H2: 99% of map unit has a high susceptibility	H2: 90% of map unit has a high susceptibility
Flood risk	L1: 0% of the map unit has a moderate to high hazard	L1: 0% of the map unit has a moderate to high hazard
Water logging	L1: 0% of map unit has a moderate to very high risk	M2: 43% of map unit has a moderate to very high risk
Phosphorus export risk	M2: 35% of map unit has a high to extreme hazard	L2: 6% of map unit has a high to extreme hazard

Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>"Native vegetation should not be cleared if it comprises a high level of biodiversity."</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains habitat for conservation significant fauna species. No conservation significant ecological communities were identified over the application area. The application area contains suitable habitat for priority and threatened flora.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> <i>"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains suitable habitat for conservation significant fauna recorded from the local area.</p>	At variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (c):</u> <i>"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared may contain habitat for Threatened flora. Advice from the DBCA was received in regard to the conservation significant flora identified from the local area.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (d):</u> <i>"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain species that indicate a TEC.</p> <p>The flora and fauna survey did not identify species that indicate the presence of a TEC over the application area.</p>	Not likely to be at variance	No .
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation types and the native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia (Government of Western Australia, 2019a), (Government of Western Australia, 2019b).</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></p>	May be at variance	Yes <i>Refer to Section 3.2.3, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>Given the distance to the nearest conservation area, the proposed clearing may have an impact on the environmental values of the Leeuwin-Naturaliste National Park.</p> <p>There is the mapped Southwest Regional Ecological Linkage vertically transecting the application area. Given the linear nature of the application area it is unlikely the proposed clearing will significantly impact on the linkage.</p>		
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."</i></p> <p><u>Assessment:</u></p> <p>Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</p> <p>The proposed clearing does not include clearing of riparian vegetation.</p>	Not at variance	No
<p><u>Principle (g):</u> <i>"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are highly susceptible to wind and subsurface acidification and not likely to be susceptible to other risks of land degradation. Some short-term water erosion may occur during the times of high rainfall events.</p>	May be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<p><u>Principle (i):</u> <i>"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."</i></p> <p><u>Assessment:</u></p> <p>Given no water courses, wetlands and Public Drinking Water Sources Areas are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not 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></p> <p>The local area is well vegetated, and the proposed clearing area is not mapped over an area with a high risk of flooding. Based on the above, small and linear area of the proposed clearing, it is unlikely the proposed clearing will exacerbate the intensity of flooding.</p> <p>Given no water courses and wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</p>	Not at variance	No

Appendix E. 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 F. Biological survey information excerpts, photographs of the vegetation and other supporting information (SW environmental, 2020), (Great Southern Bio Logic, 2022)

Table 3-4 Vegetation communities described for the project area.





Community Code	Description	FCT (Inferred)	Condition	Example photo of community
C	Cleared	NA	Completely Degraded	
ArBsAf	Closed Shrubland of <i>Acacia rostellifera</i> , <i>Banksia sessilis</i> var. <i>cordata</i> (P4) and <i>Agonis flexuosa</i> over <i>Spyridium globulosum</i> and <i>Hibbertia</i> spp.	-	Very Good	
AfSgAr	Woodland of <i>Agonia flexuosa</i> over open shrubland <i>Spyridium globulosum</i> , <i>Acacia rostellifera</i> over <i>Loxocarya cinerea</i> , <i>Melaleuca systema</i> and <i>Stylidium repens</i>	-	Good-Very Good (mostly Very Good)	
AfBaSg	Woodland of <i>Agonis flexuosa</i> and <i>Banksia attenuata</i> over open shrubland of <i>Spyridium globulosum</i> and <i>Hibbertia cuneiformis</i> over sedgeland of <i>Desmocladius fascicularis</i> and <i>Conostylis aculeata</i>	-	Completely Degraded-Very Good (Mostly Good/Very Good)	

Figure 2: Vegetation communities identified within the survey area.

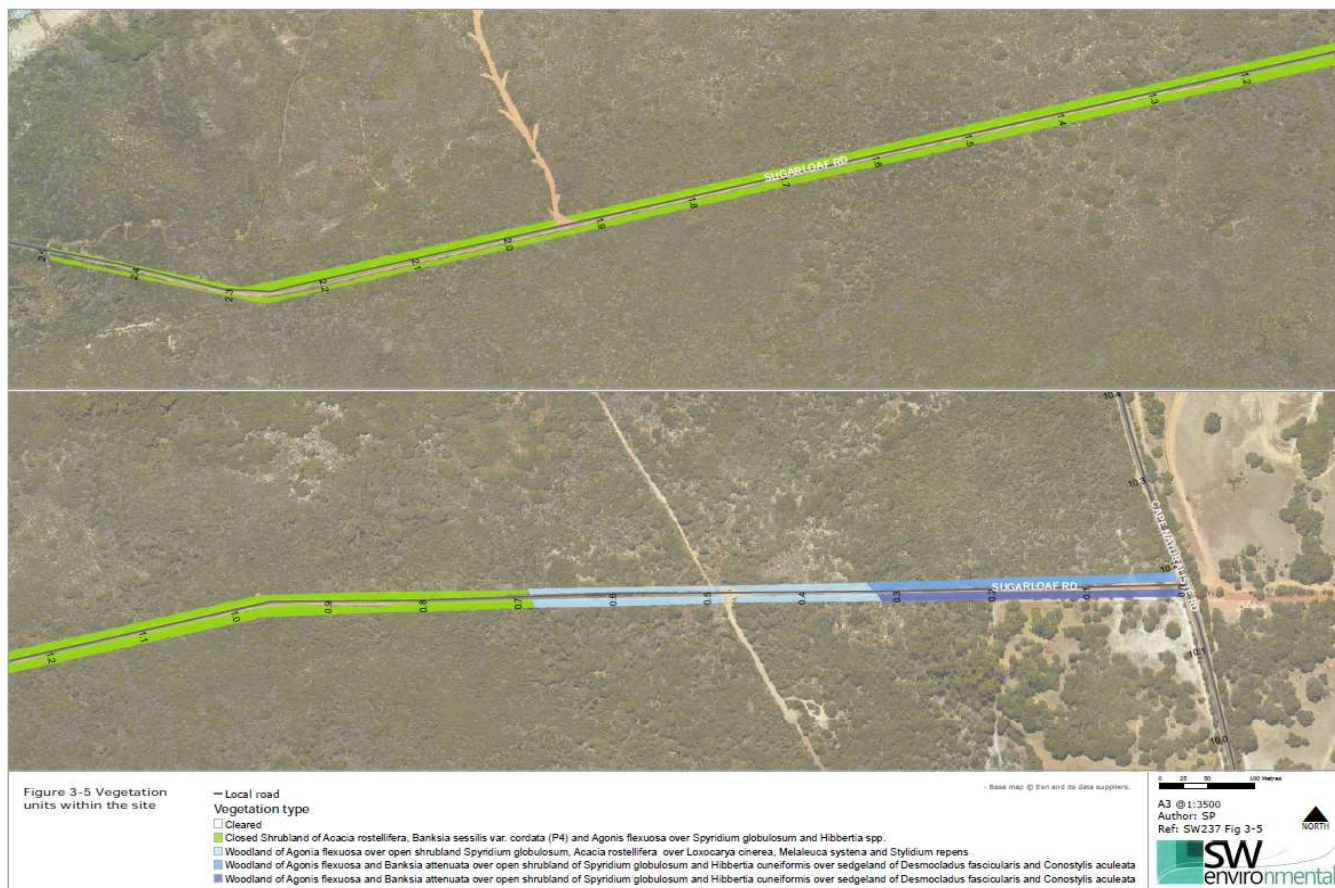


Figure 3: Mapped vegetation communities over the survey area.



Figure 4: Mapped vegetation condition over the survey area.

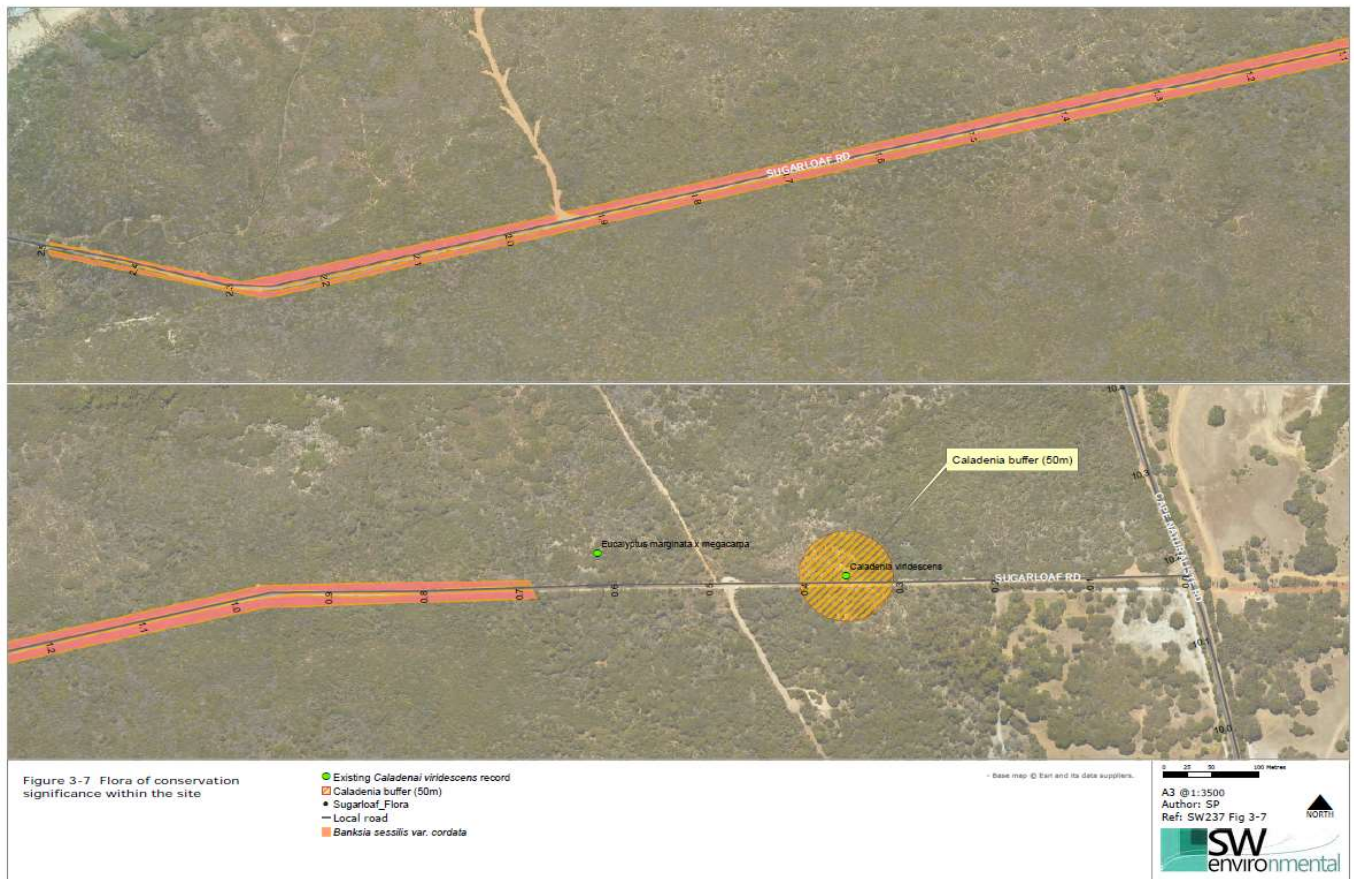


Figure 5: Location of conservation significant flora species in the vicinity of the survey area

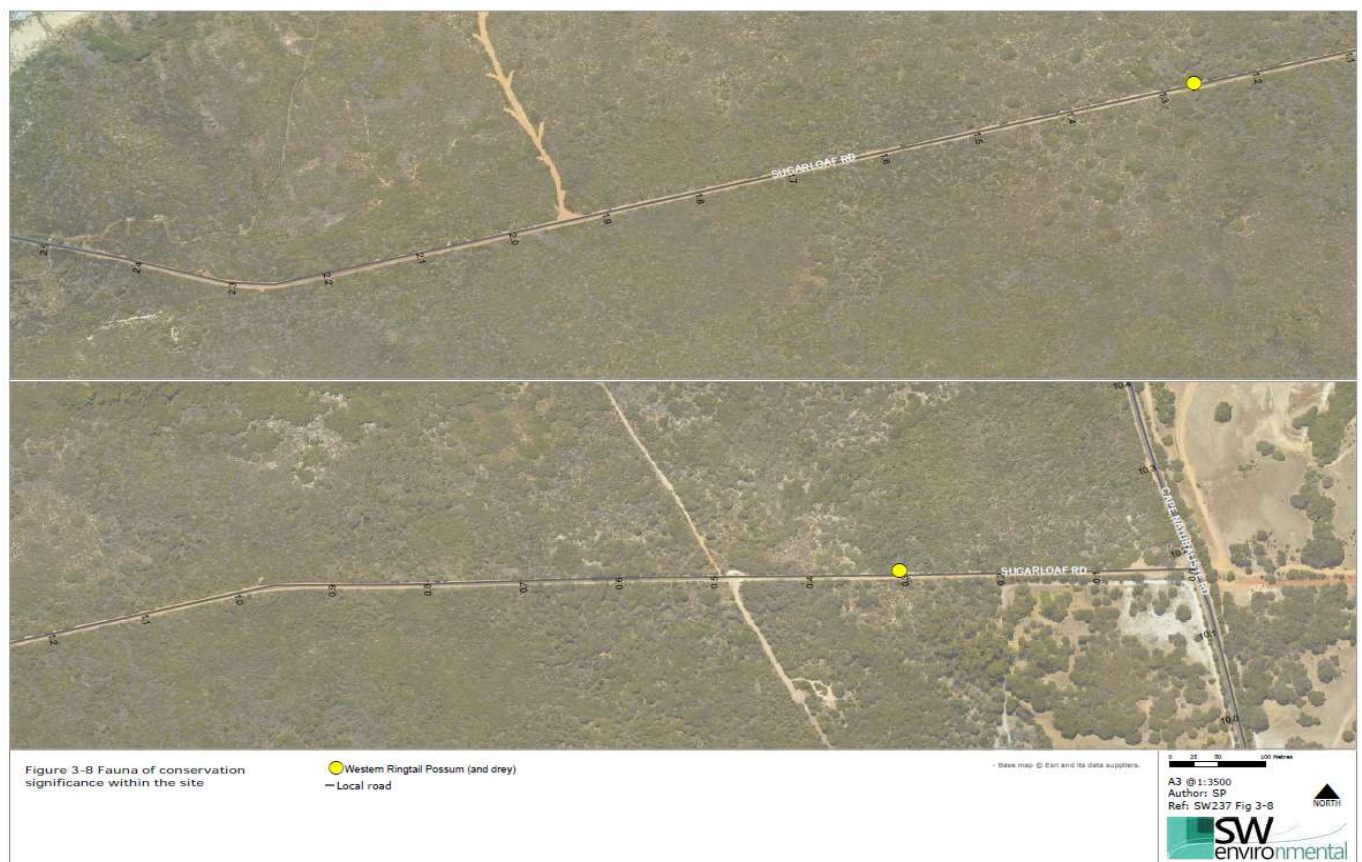


Figure 6: The location of the identified Western Ringtail Possum dreys.



Photo 1 Typical woodland to the eastern end of the site



Photo 2 Typical woodland to the eastern end of the site.



Photo 3 Occupied WRP drey



Photo 4 Typical shrubland to the west of the site



Photo 4 Typical shrubland to the west of the site

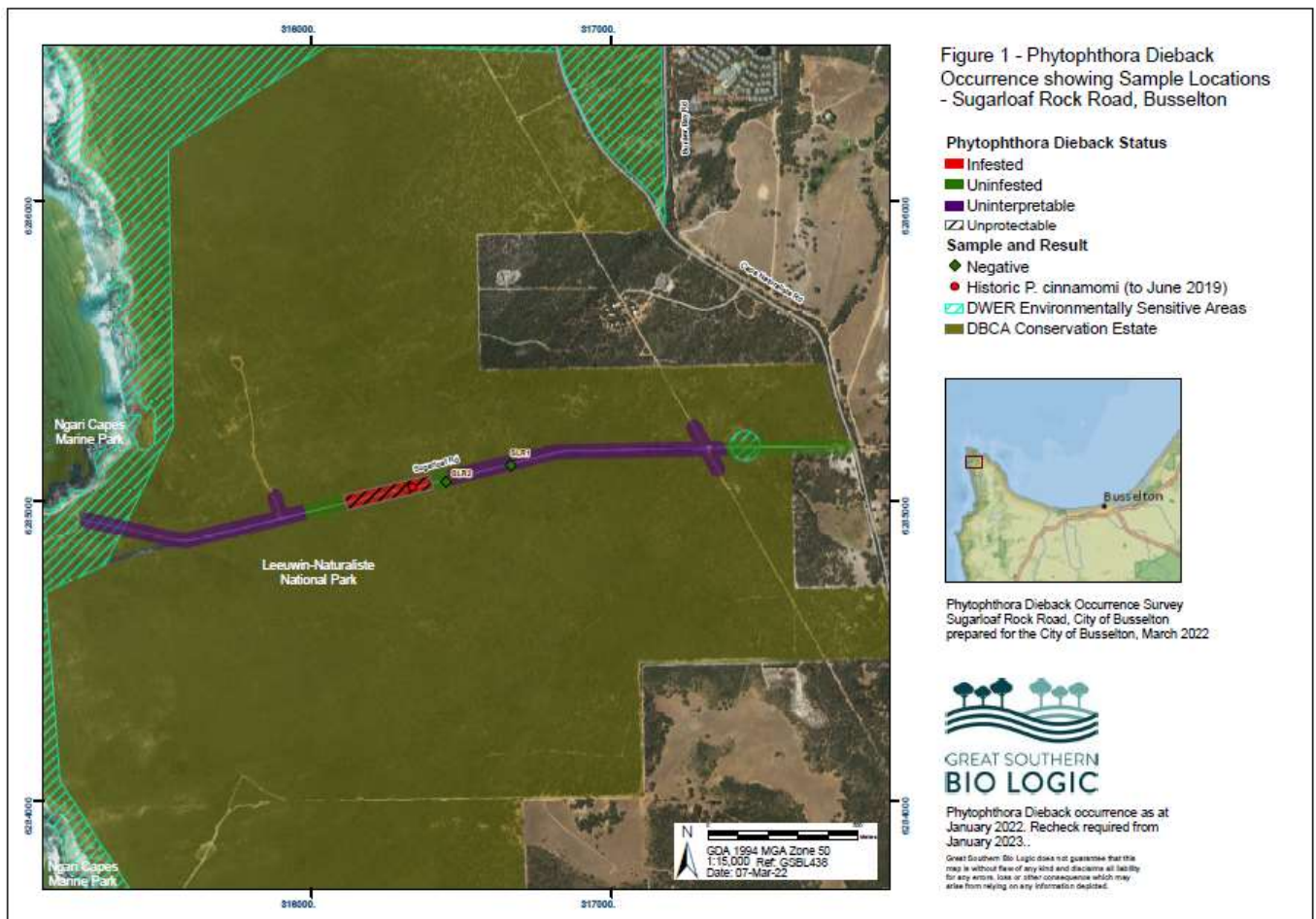


Figure 7: Phytophthora dieback occurrence over the survey area.

Appendix G. Sources of information

G.1. GIS databases

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

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

Restricted GIS Databases used:

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

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