WESTERN
ENVIRONMENTAL

Targeted Western Ringtail Possum Survey 2024

Sandpits Rd Drainage Swale

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Targeted Western Ringtail Possum Survey 2024

Report No:
A23.241-RPT-FSR_01_FINAL
Issue Date:
20-Oct-2024
Status
FINAL

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1. Introduction

1.1 Project Background

Brendan Oversby on behalf of Allesac Pty Ltd atf Jocas Trust commissioned Western Environmental Pty Ltd (WEPL) to undertake a Western Ringtail Possum Survey. The Survey Area covers 0.12 ha within Lot 6 Sandpits Rd, Crooked Brook. The survey was designed to support the proponent to apply for a Clearing Permit for the purpose of construction of a drainage swale and to inform assessment of potential impacts to Western Ringtail Possum as a Matter of National Environmental Significance listed under the Commonwealth *Environmental Protection and Biodiversity* Conservation *Act* (1999).

Previous Western Ringtail Possum surveys covering the Survey Area include:

- Fauna Assessment undertaken by Greg Harewood as part of Approved Subdivision Application (No 162074). Survey determined that Western Ringtail Possum are present and suitable habitat exists within the subdivision area and in surrounds.

1.2 Objectives and Scope of Work

Scope of work for field survey comprised:

- Nocturnal spotlighting search.
- Diurnal searches for scats and dreys.
- Thermal scope inspection of dreys for occupancy.

This report presents the results of the field survey undertaken to support the above objectives.

1.3 Relevant Legislation and Guidance

This environmental assessment was conducted in accordance with Commonwealth and State legislation and guidelines:

- Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).
- Western Australian Environmental Protection Act 1986 (EP Act).
- Western Australian Biodiversity Conservation Act 2016 (BC Act).
- Western Australian Biodiversity Conservation Regulations 2018.
- Department of the Environment (DotE). (2013). Matters of National Environmental Significance. Significant Impact Guidelines 1.1 - Environment Protection and Biodiversity Conservation Act 1999.
- Department of Sustainability Environment Population and Communities (DSEWPaC). (2011). Survey Guidelines for Australia's Threatened Mammals. Canberra, Australia.

As well as those listed above, the assessment complied with Environmental Protection Authority (EPA) requirements for environmental survey and reporting in Western Australia, as outlined in:

- EPA. (2020). Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment. Known herein as the 'Fauna Technical Guidance'.

A short description of key legislation is provided in Appendix A. Other definitions, including species and ecological community conservation categories, are provided in Appendix B.

1.4 Survey Limitations and Constraints

Limitations and constraints of the Western Ringtail Possum survey as outlined in the Fauna Survey Technical Guidance are detailed below in Table 1.

Table 1: Limitations and Constraints of the Fauna Survey

Possible Limitation	Degree of Limitation (Significant, Moderate or Negligible)	Potential Constraints on Survey Outcomes
Survey Level/ Scope	Negligible	The targeted assessment of western ringtail possum is considered to provide information required to approvals and referrals.
Availability of contextual information at a regional and local scale	Negligible	All data required to complete the scope of works including previous survey reports and data, regional and local contextual information was available.
Site Access	Negligible	The Survey Area was readily accessed by on foot.
Survey Intensity and Extent	Negligible	All planned Survey Areas were adequately sampled in line with the project scope of works.
Experience	Negligible	The ecologist leading the field survey (Andrew Fry) has been undertaking fauna habitat assessments in Western Australia for over 10 years, with over 10 years experience in the southwest bioregion undertaking western ringtail possum spotlighting surveys.
Timing, weather, season	Negligible	Western ringtail possum spotlighting searches were undertaken in optimal condition in still and clear conditions on cool nights. Seasonal timing (October) coincides with September to November breeding peak for coastal populations and was considered optimal for establishing population estimates (DPaW, 2017). The temperatures and weather experienced during both field surveys were not considered a limitation to the survey and did not affect the ability to record fauna or habitats.
Proportion of the flora and fauna recorded and/or collected, and any identification issues	Negligible	Single species targeted survey for readily identifiable species
Mapping Reliability	Negligible	The majority of the Survey Areas was traversed by foot and mapping reliability is considered high.
Disturbances (fire, flood etc.)	Negligible	Areas of disturbance associated with historic clearing were recorded but were not a constraint on the results of the survey.

2. Methodology

2.1 Targeted Western Ringtail Possum Surveys

Survey methodology comprised:

- Diurnal surveys undertaken on afternoon of 16 October searching for scats and dreys. Nocturnal surveys on evening of 16 October 2024.
- Where dreys were identified a thermal imaging scope was used to assess if drey occupied. Under suitable temperatures a thermal scope can be used to identify that a Western Ringtail Possum is present within a drey due to the animal's body heat radiating through and warming the drey relative to the surround vegetation.
- Nocturnal searches using headtorches along transects. Due to the very small Survey Area size the entire area was easily spotlighted.

See tracklogs of survey effort below in Figure 1.

3. Results and Discussion

3.1 2024 Survey Results

Results are summarised below in Table 2 and location records provided with comments and coordinates in Appendix C and shown in Figure 1.

The Western Ringtail Possum is an arboreal species whose diet comprises almost exclusively myrtaceous plants primarily peppermint, marri and jarrah (DPaW, 2017). In the Bunbury region, western ringtail possum habitat typically has a dominant or co-dominant upper or mid stratum of peppermint trees. In other regions the species also utilises marri and jarrah woodlands, coastal heath, riparian vegetation and thickets of myrtaceous species (DPAW, 2017). The dense connective canopy of peppermint and melaleuca trees within the Survey Area provided suitable habitat for the species. See typical habitat image below. The habitat within the Survey Area occurs at the end of an old reserve that is vegetated. There is no vegetation to the north, therefore the habitat does not act as part of a connective corridor.

No scats were recorded, due to dense understory this survey type was not practicable. Previous survey effort has demonstrating presence of Western Ringtail Possum therefore scat searches were not undertaken extensively.

Three dreys were recorded in three separate melaleuca trees. The dreys recorded were intact and well maintained and appear to have been in use or recently used. A thermal scope was used to assess if dreys were occupied during the later afternoon. Thermal scope confirmed that one of the three dreys was occupied at the time of survey. See images below with drey in shot and Western Ringtail Possum size heat signature.

From spotlighting surveys one individual was recorded. Individual was female without sub adult young at heel, but potential pouch young.

Table 2: Summary of Western Ringtail Observations 2024

Sampling Type		Number of Records	Abundance
Scat		-	Not scored
Drey		Three dreys in three trees	3
Spotlighting	Night 01	1	1

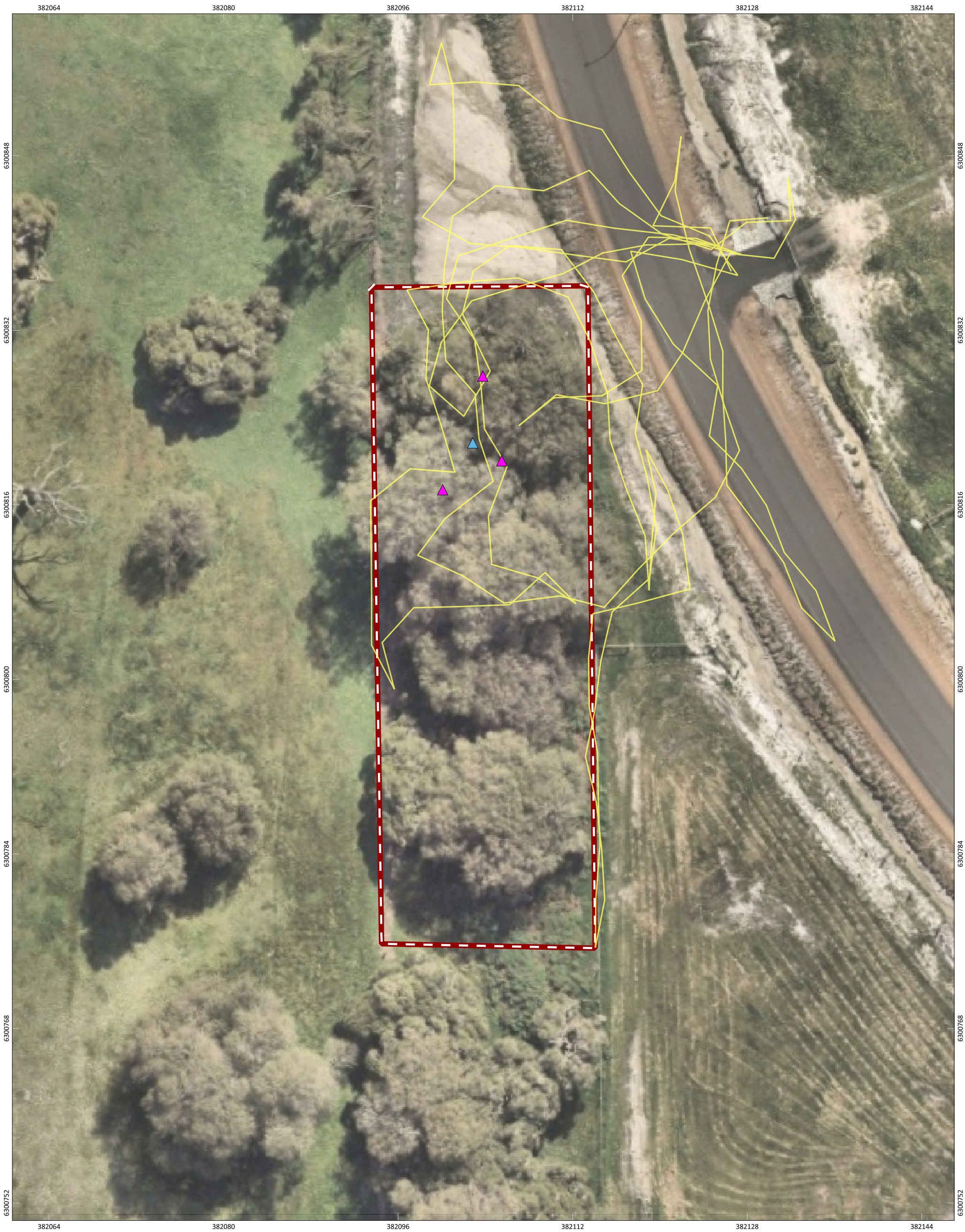

Figure 1: Western Ringtail Possum Survey Results

N

0 3 6 9 12 m

PROJECT/REPORT NAME	Western Ringtail Possum Survey Sandpits Rd, Crooked Brook
SCALE	1:325
SHEET SIZE	A3 COLOUR
CLIENT	Allsac Pty Ltd
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A24.241
VERSION	0
DATA SOURCE	Nearmap Imagery (13 September 2024)
DRAWN BY / REVIEWED BY	JP/AF
DATE	18/10/2024

Legend

Survey Area

Targeted Search Effort

Western Ringtail Possum

Nest/Drey

Spotlight

No	Description	Drawn	Approved	Date
A	Original issue	JP	AF	18/10/2024

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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3.2 Population Estimate and Home Range

Population is subject to variation following yearly seasonal cycles and longer-term weather events such as drought and heatwaves. Typically breeding peaks occur in April to July and September to November (DPAW, 2017). The survey period in October following an above average winter season of rainfall was considered optimal for estimating population.

An assessment of habitat for Western Ringtail Possum was undertaken by the then Department of Parks and Wildlife (DPaW) for the region in 2014. This mapping identifies the Survey Area and adjacent vegetation as representing Class C- Medium habitat suitability with an estimated Western Ringtail Possum density of 2-5 individuals per ha and an observed density range of 0.1-4.3 individuals per ha (Shedley and Williams 2014).

Home range size varies considerable depending on region and habitat quality. In the Bunbury region a study of translocated females estimated home range sizes of 0.2-4.8 ha (Shedley and Williams 2014).

Western Ringtail Possums can construct and use multiple dreys as well as tree hollows across their home range. Dreys may last for several years post construction in a sheltered position. It is estimated that Western Ringtail Possum occupy 40-46% of dreys in an area where several dreys are constructed (Shedley and Williams 2014).

Considering the 0.12 ha size of the Survey Area, the presence of three dreys and the confirmation of one occupied drey, it is considered that the Survey Area comprises a portion of an individuals home range and currently supports one individual. It is considered unlikely that the Survey Area comprises the entirety of an individual home range with adjacent connected habitat of the same quality extending to the south.

3.3 Discussion and Recommendations

The key findings of the survey are:

- The Survey Area comprises suitable habitat for Western Ringtail Possum with dense peppermint and melaleuca.
- The habitat is located at the north tip of a 'peninsula' of vegetation. The habitat does not play an important role in connectivity in the landscape.
- There are three dreys present, with one confirmed as occupied at the time of survey.
- A single individual (female) was recorded by spotlighting.
- Its is considered unlikely that the Survey Area comprises the entirety of an individual's home range with adjacent connected habitat of the same quality extending to the south.

Key recommendations are:

- Prior to any clearing an authorised and licences fauna spotter be engaged to relocate individual. This may be undertaken by destruction of dreys at sunset and encouraging individual to move outside of the clearing area into connected habitat to the south. The connected habitat is highly likely to form part of the individuals existing home range.
- Fauna spotter to be present for clearing to inspect any hollows or relocate animals as required.
- Consideration be given to offsetting of loss of habitat through revegetation within the subdivision.
- The proponent should consider potential for impact to Western Ringtail Possum habitat as a Matter of National Environmental Significance as listed in the EPBC Act. The *Significant impact guidelines for the vulnerable western ringtail possum (Pseudocheirus occidentalis) in the southern Swan Coastal Plain, Western Australia* (2009) identify that there is possibility of a significant impact if "clearing in a remnant habitat patch that is greater than 0.5 hectares in size". The connective habitat extending out from the Survey Area is >0.5 ha in size meeting this definition. Due to the very small size of the Survey Area and potential clearing representing only a portion of the overall Survey Area the project may not meet definition of 'significant'. Proponents are responsible for determining to refer or not refer a project to the Commonwealth. The proponent is recommended to consider the "Self-assessment before making a referral under the EPBC Act" process provided on the Department of Climate Change, Energy, the Environment and Waters website.

4. References

Bureau of Meteorology. (2007). About Climate Statistics. http://www.bom.gov.au/climate/cdo/about/about-stats.shtml.

Bureau of Meteorology. (2024). Monthly Climate Data Statistics. www.bom.gov.au/climate/data.

Clarke JR (2011) Translocation outcomes for the Western Ringtail Possum (Pseudocheirus occidentalis) in the presence of the Common Brushtail Possum (Trichosurus vulpecula): health, survivorship and Habitat use. PhD Thesis, Murdoch University, Perth Western Australia

Department of Biodiversity Conservation and Attractions (DBCA). (2023c). Threatened and Priority Fauna List. Retrieved on 5 September 2022 from https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals.

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (n.d) Habitat Scoring System for Western Ringtail Possum (Pseudocheirus occidentalis)

Department of Environmental Regulation (DER). (2014) A guide to the assessment of applications to clear native vegetation under Part V Division 2 of the Environmental Protection Act 1986.

Department of the Environment (DotE). (2013). Matters of National Environmental Significance: Significant Impact Guidelines 1.1. Canberra, Australia.

Department of Parks and Wildlife (DPaW), (2017). Western Ringtail Possum (Pseudocheirus occidentalis) Recovery Plan. Wildlife Management Program No. 58. Department of Parks and Wildlife, Perth, WA.

Department of Sustainability Environment Population and Communities (DSEWPaC). (2011). Survey Guidelines for Australia's Threatened Mammals. Canberra, Australia.

Environmental Protection Authority (EPA). (2020). Technical Guidance - Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment.

Environmental Protection Authority (EPA). (2021). Statement of Environmental Principles, Factors and Objectives.

Jones BA, How RA and Kitchener DJ (1994) A field study of Pseudocheirus occidentalis (Marsupalia: Petauridae). II. Population studies. Wildlife Research, 21: 189–201.

Pahl LI (1987) Survival, age determination and population age structure of the common ringtail possum, Pseudocheirus peregrinus, in a Eucalyptus woodland and a Leptospermum thickets. Aust. J. Zool., 35: 625–639.

Shedley E and Williams K (2014) An assessment of habitat for western ringtail possum (Pseudocheirus occidentalis) on the southern Swan Coastal Plain. Unpublished report for the Department of Parks and Wildlife, Bunbury, Western Australia

Western Australian Museum. (2022). Checklist of the Terrestrial Vertebrate Fauna of Western Australia. Retrieved on 5 September 2022 from http://museum.wa.gov.au/research/departments/terrestrialzoology/checklist-terrestrial-vertebrate-fauna-western-australia.

Yin HK (2006) The metabolic and hygric physiology of Western Ringtail Possum (Pseudocheirus occidentalis). Honours Thesis, Curtin University of Technology, Perth.

Appendix A
Legislation

Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act aims to protect matters of national environmental significance (MNES). Under the EPBC Act, the Commonwealth Department of Climate Change, Energy and the Environment lists Threatened species and communities in categories determined by criteria set out in the EPBC Act.

Projects likely to cause a significant impact on MNES should be referred to the DCCEEW for assessment under the EPBC Act.

Biodiversity Conservation Act 2016

The Biodiversity Conservation Act 2016 aims to conserve and protect biodiversity and biodiversity components within the State and to promote ecologically sustainable use of biodiversity components in the State.

Environmental Protection Act 1986

Declared Rare Flora (DRF) and Threatened Ecological Communities (TECs) are given special consideration in environmental impact assessments and have special status as Environmentally Sensitive Areas (ESAs) under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. Exemptions for a clearing permit do not apply in an ESA. In addition, habitat necessary for the maintenance of indigenous fauna is considered in the clearing principles and assessed during consideration of applications for a clearing permit.

Biosecurity and Agricultural Management Act 2007

Plants may be 'Declared' by the Minister for Agriculture and Food under the BAM Act. The Western Australian Organism List contains information on the area(s) in which a plant is declared and the control and keeping categories to which it has been assigned in Western Australia. A declaration may apply to the whole State, to districts, individual properties or even to single paddocks. If a plant is 'Declared', landholders are obliged to control that plant on their properties.

Weeds of National Significance

The Australian Government along with the State and Territory governments has endorsed 32 WoNS. Four major criteria were used in determining WoNS:

- The invasiveness of a weed species.
- A weed's impacts.
- The potential for spread of a weed.
- Socio-economic and environmental values.

Each WoNS has a national strategy and a national coordinator, responsible for implementing the strategy. WoNS are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts.

Department of Biodiversity, Conservation and Attractions Priority Lists

DBCA lists 'Priority' flora and fauna that have not been assigned statutory protection as "Threatened" under the BC Act and are under consideration for declaration as Threatened. Flora and fauna assessed as Priority 1-3 are considered to be in urgent need of further survey. Priority 4 flora requires monitoring every 5 -10 years.

DBCA maintains a list of Priority Ecological Communities (PECs) which identifies plant communities that require further investigation before possible nomination for TEC status. Once listed, a community becomes a PEC and, when endorsed by the WA Minister for Environment, becomes a TEC and protected as an ESA under Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

Informal Recognition of Flora and Fauna

Certain populations or communities of flora and/or fauna may be of local significance or interest because of their patterns of distribution and abundance. For example, specific locations of flora and may be locally significant because they are range extensions to the previously known distribution, or are newly discovered taxa (and have the potential to be of more than local significance). In addition, many species are in decline as a result of threatening processes (land clearing, grazing, and changed fire regimes) and relict populations of such species assume local importance for DBCA. It is not uncommon for DBCA to make comment on these species of interest.

Appendix B
Definitions and Criteria

EPBC Act Categories for Flora, Fauna and Ecological Communities

Category	Threatened Species	Threatened Ecological Communities
Extinct	A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.	N/A.
Extinct in the wild	A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time: (a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.	N/A.
Critically Endangered (CE)	A native species is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.	An ecological community is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered (EN)	A native species is eligible to be included in the endangered category at a particular time if, at that time: (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.	An ecological community is eligible to be included in the endangered category at a particular time if, at that time: (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable (VU)	A native species is eligible to be included in the vulnerable category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.	An ecological community is eligible to be included in the vulnerable category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.
Conservation Dependent	A native species is eligible to be included in the conservation dependent category at a particular time if, at that time: (a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish. (ii) the species is the focus of a plan of management that provides for	N/A.

Category	Threatened Species	Threatened Ecological Communities
	management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long-term survival in nature are maximised. (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory. (iv) cessation of the plan of management would adversely affect the conservation status of the species.	

Conservation Codes for Western Australian Flora and Fauna (DBCA)

Conservation Codes for Western Australian Flora and Fauna	
Threatened, Extinct and Specially Protected fauna or flora1 are species2 which have been adequately searched for and are deemed to be, in the wild, Threatened, extinct or in need of special protection, and have been gazetted as such. **The Wildlife Conservation (Specially Protected Fauna) Notice 2018 and the Wildlife Conservation (Rare Flora) Notice 2018 have been transitioned under regulations 170, 171 and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the Biodiversity Conservation Act 2016.** **Categories of Threatened, Extinct and Specially Protected fauna and flora are:**	
T	Threatened species Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as Threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act). Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna. Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora. The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using International Union for Conservation of Nature (IUCN) Red List categories and criteria as detailed below.
CR	Critically endangered species Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered undersection 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.
EN	Endangered species Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.
VU	Vulnerable species

Conservation Codes for Western Australian Flora and Fauna	
	Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable undersection 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.
Extinct species **Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.**	
EX	Extinct species Species where "there is no reasonable doubt that the last member of the species has died", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act). Published as presumed extinct under schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for extinct fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for extinct flora.
EW	Extinct in the wild species Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act). Currently there are no Threatened fauna or Threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.
Specially protected species **Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.** **Species that are listed as Threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.**	
MI	Migratory species Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species. Published as migratory birds protected under an international agreement under schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
CD	Species of special conservation interest (conservation dependent fauna) Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as Threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Published as conservation dependent fauna under schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.

Conservation Codes for Western Australian Flora and Fauna	
OS	Other specially protected species Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Published as other specially protected fauna under schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
P	Priority species Possibly Threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of Priority for survey and evaluation of conservation status so that consideration can be given to their declaration as Threatened fauna or flora. Species that are adequately known, are rare but not Threatened, or meet criteria for near Threatened, or that have been recently removed from the Threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
1	Priority 1: Poorly-known species Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
2	Priority 2: Poorly-known species Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
3	Priority 3: Poorly-known species Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
4	Priority 4: Rare, Near Threatened and other species in need of monitoring (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently Threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent. (c) Species that have been removed from the list of Threatened species during the past five years for reasons other than taxonomy.

1 The definition of flora includes algae, fungi and lichens.

DBCA Definitions and Criteria for TECs and PECs

Criteria	Definition
Threatened Ecological Communities	
Presumed Totally Destroyed (PD)	An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future. An ecological community will be listed as presumed totally destroyed if there are no recent records of the community being extant and either of the following applies (A or B): A. Records within the last 50 years have not been confirmed despite thorough searches of known or likely habitats or B. All occurrences recorded within the last 50 years have since been destroyed.
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated. An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future. This will be determined on the basis of the best available information, by it meeting any one or more of the following criteria (A, B or C): A. The estimated geographic range, and/or total area occupied, and/or number of discrete occurrences since European settlement have been reduced by at least 90% and either or both of the following apply (i or ii): i. geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is imminent (within approximately 10 years). ii. modification throughout its range is continuing such that in the immediate future (within approximately 10 years) the community is unlikely to be capable of being substantially rehabilitated. B. Current distribution is limited, and one or more of the following apply (i, ii or iii): i. geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the immediate future (within approximately 10 years). ii. there are very few occurrences, each of which is small and/or isolated and extremely vulnerable to known threatening processes. iii. there may be many occurrences but total area is very small and each occurrence is small and/or isolated and extremely vulnerable to known threatening processes. C. The ecological community exists only as highly modified occurrences that may be capable of being rehabilitated if such work begins in the immediate future (within approximately 10 years).
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Criteria	Definition
	An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. This will be determined on the basis of the best available information by it meeting any one or more of the following criteria (A, B, or C): A. The geographic range, and/or total area occupied, and/or number of discrete occurrences have been reduced by at least 70% since European settlement and either or both of the following apply (i or ii): i. the estimated geographic range, and/or total area occupied and/or number of discrete occurrences are continuing to decline such that total destruction of the community is likely in the short term future (within approximately 20 years). ii. modification throughout its range is continuing such that in the short term future (within approximately 20 years) the community is unlikely to be capable of being substantially restored or rehabilitated. B. Current distribution is limited, and one or more of the following apply (i, ii or iii): i. geographic range and/or number of discrete occurrences, and/or area occupied is highly restricted and the community is currently subject to known threatening processes which are likely to result in total destruction throughout its range in the short term future (within approximately 20 years). ii. there are few occurrences, each of which is small and/or isolated and all or most occurrences are very vulnerable to known threatening processes. iii. there may be many occurrences but total area is small and all or most occurrences are small and/or isolated and very vulnerable to known threatening processes. The ecological community exists only as very modified occurrences that may be capable of being substantially restored or rehabilitated if such work begins in the short-term future (within approximately 20 years).
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range. An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future. This will be determined on the basis of the best available information by it meeting any one or more of the following criteria (A, B or C): A. The ecological community exists largely as modified occurrences that are likely to be capable of being substantially restored or rehabilitated. B. The ecological community may already be modified and would be vulnerable to threatening processes, is restricted in area and/or range and/or is only found at a few locations. C. The ecological community may be still widespread but is believed likely to move into a category of higher threat in the medium to long term future because of existing or impending threatening processes.
Priority Ecological Communities	
Priority One	Poorly known ecological communities Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of

Criteria	Definition
	survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority Two	Poorly known ecological communities Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, state forest, unallocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities, but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
Priority Three	Poorly known ecological communities i. Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or. ii. Communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or. iii. Communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. Communities may be included if they are comparatively well known from several localities, but do not meet adequacy of survey requirements and / or are not well defined, and known threatening processes exist that could affect them.
Priority Four	Ecological communities that are adequately known, rare but not Threatened or meet criteria for Near Threatened, or that have been recently removed from the Threatened list. These communities require regular monitoring. i. Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently Threatened or in need of special protection, but could be if present circumstances change These communities are usually represented on conservation lands. ii. Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. iii. Ecological communities that have been removed from the list of Threatened communities during the past five years.
Priority Five	Conservation Dependent Ecological Communities Ecological Communities that are not Threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming Threatened within five years.

Appendix C
Western Ringtail Possum Observation Data

DateObs	CommonName	Abundance	ObsMethod	Comments	Easting	Northing
16/10/2024	Western Ringtail Possum	-	Nest or Drey	confirmed WRP present from thermal scope	382105.49	6300820.031
16/10/2024	Western Ringtail Possum	-	Nest or Drey	Large drey	382103.758	382103.758
16/10/2024	Western Ringtail Possum	-	Nest or Drey	Large drey	382100.078	6300817.373
16/10/2024	Western Ringtail Possum	1	Spotlight	female	382102.83	6300821.66