Biota Environmental Sciences

Anketell Road Upgrade Targeted Chuditch Survey

Prepared for

Main Roads
Western Australia

Rev0
November 2024

ABN 49 092 687 119
Level 4, 46 Colin Street
West Perth, Western Australia 6005
Ph: (08) 9328 1900

Job No.: 1802

Prepared by: V. Ford
R. Boyer

Document Review History

Version:	3	Peer review:	S. Ford
	Rev 0	Director review:	G. Humphreys
	Rev 0	Format review:	G. Humphreys
		Approved for issue:	G. Humphreys

File path: /Volumes/Cube/Current/1802 (Westport Targeted Chuditch Survey)/Documents/1802 Anketell Road Upgrade Targeted Chuditch Survey Rev 0.docx

Anketell Road Upgrade Targeted Chuditch Survey

Contents

Appendices

Tables

Figures

Plates

1.0 Executive Summary

Main Roads Western Australia Metropolitan Region is undertaking a road planning study of the outer harbour transport corridor project; Anketell Road Upgrade (Leith Road to Kwinana Freeway). As part of the environmental impact assessment for the project, Biota Environmental Sciences was commissioned to undertake a targeted survey for the Chuditch (*Dasyurus geoffroii;* listed as Vulnerable at State and Commonwealth level) in relation to the West of Kwinana Referral Area component of this project.

Five camera sites were located within the Referral area for a total of 621 trap-nights, while six camera sites were placed within nearby Jandakot Regional Park and Beeliar Regional Park for a total of 630 trap nights.

The Chuditch was not recorded. A total of 30 vertebrate species were recorded via the motion camera array (Figure 3.2); six native and six introduced mammals, 14 native and one introduced bird species and four reptile species. There were twenty species recorded within the Referral area and 17 from contextual sites. Three mammal species of significance were recorded:

- Quenda (*Isoodon fusciventer*) (Department of Biodiversity, Conservation and Attractions (DBCA) Priority 4) was recorded within both the Referral area and at contextual sites;
- Wambenger Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) (*Biodiversity Conservation Act 2016* Conservation Dependent) was recorded at contextual sites WRF09MC and WRF10MC within Jandakot Regional Park; and
- Western Brush Wallaby (*Notamacropus irma*) (DBCA Priority 4) was recorded from one contextual site (WRF08MC) in Jandakot Regional Park.

Based on the lack of population or even transient individuals evident during the current survey, and the limited number of historical records, none of the significant impact criteria relevant to a species listed as Vulnerable under the EPBC Act (Department of the Environment 2013) were triggered.

2.0 Introduction

2.1 Project Background

Main Roads Western Australia (Main Roads) Metropolitan Region is undertaking a road planning study of the outer harbour transport corridor; Anketell Road Upgrade (Leith Road to Kwinana Freeway) henceforth, 'the Project'. The purpose of the study is to identify the ultimate layout of the Westport Freight Road corridor, including preliminary design concepts, and the necessary land requirements for inclusion in the Metropolitan Region Scheme.

As part of the environmental impact assessment for the project, Biota Environmental Sciences (Biota) was commissioned to undertake a targeted survey for the Chuditch (*Dasyurus geoffroii*) in relation to the Anketell Rd Upgrade (Leith Road to Kwinana Freeway) Referral area (hereafter referred to as the 'Referral area').

2.2 Impetus for Study

Chuditch are listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Western Australian *Biodiversity Conservation Act 2016* (BC Act). Formerly occurring over much of the Australian continent, the species is now restricted to south-western Australia (Woinarski et al. 2014). Although previously occurring across a wide range of habitats including woodlands, dry sclerophyll forests and desert areas, it now occurs primarily in Jarrah forests and nearby areas, but with isolated subpopulations still present in the Avon Wheatbelt, eastern Goldfields woodlands, and near Fitzgerald River National Park and Ravensthorpe Range (Woinarski et al. 2014).

Contemporary records of the Chuditch on the Swan Coastal Plain are rare and, notably, two such records are from reserves adjacent to the Referral area: Wandi Nature Reserve (Jandakot Regional Park) in April 2009, as an individual snared in a rabbit trap, and in 2013 in the vicinity of The Spectacles (Beeliar Regional Park). Taking a precautionary approach given these historical records, Main Roads commissioned Biota to conduct a targeted survey to more robustly assess the likelihood of the Chuditch occurring within the Referral area.

Chuditch generally need sizeable areas of woodland habitat (>20,000 ha) to persist (DEC 2012). As such, they were considered unlikely to reside within the isolated fragments of eucalypt woodland within much of the Referral area (Biota 2024). However, it is possible that a resident population may occur within one of the larger reserves, such as Jandakot Regional Park or Beeliar Regional Park, where the species has previously been recorded. It was recognised that there may be some potential for the survey area to be utilised on a transient basis if a population was present nearby.

Reflecting its status as a top-tier predator, Chuditch, if they were to occur in the vicinity of the Referral area, would be in low numbers even in high quality habitat and could easily be missed using a short-term trapping programme, especially if animals were using the area intermittently rather than as residents. Consequently, a 6-month camera-trapping regime was employed to improve the probability of detecting the species if present. Moreover, the camera-trapping programme was timed to span the periods of greatest movement of individuals: when young disperse from dens in late summer and the mating season when males search for females from April through to July (DEC 2012).

2.3 Scope and Objectives

The overall aim of the study was to assess the likelihood of the project having a significant impact on the Chuditch using the criteria defined in the significant impact guidelines for matters of national environmental significance (MNES) (Department of the Environment 2013) A three-step approach was taken in assessing the risk of significant impact to the Chuditch as defined in Department of the Environment (2013):

1. assessing the likelihood of occurrence within the Referral area;
2. assessing whether any occurrence is likely to be as resident individuals utilising core habitat, or transitory use of secondary habitat types; and
3. using the likelihood of occurrence together with potential habitat impact to determine risk of significant impact to the Chuditch, using the criteria relevant to a species listed as Vulnerable under the EPBC Act (Department of the Environment 2013).

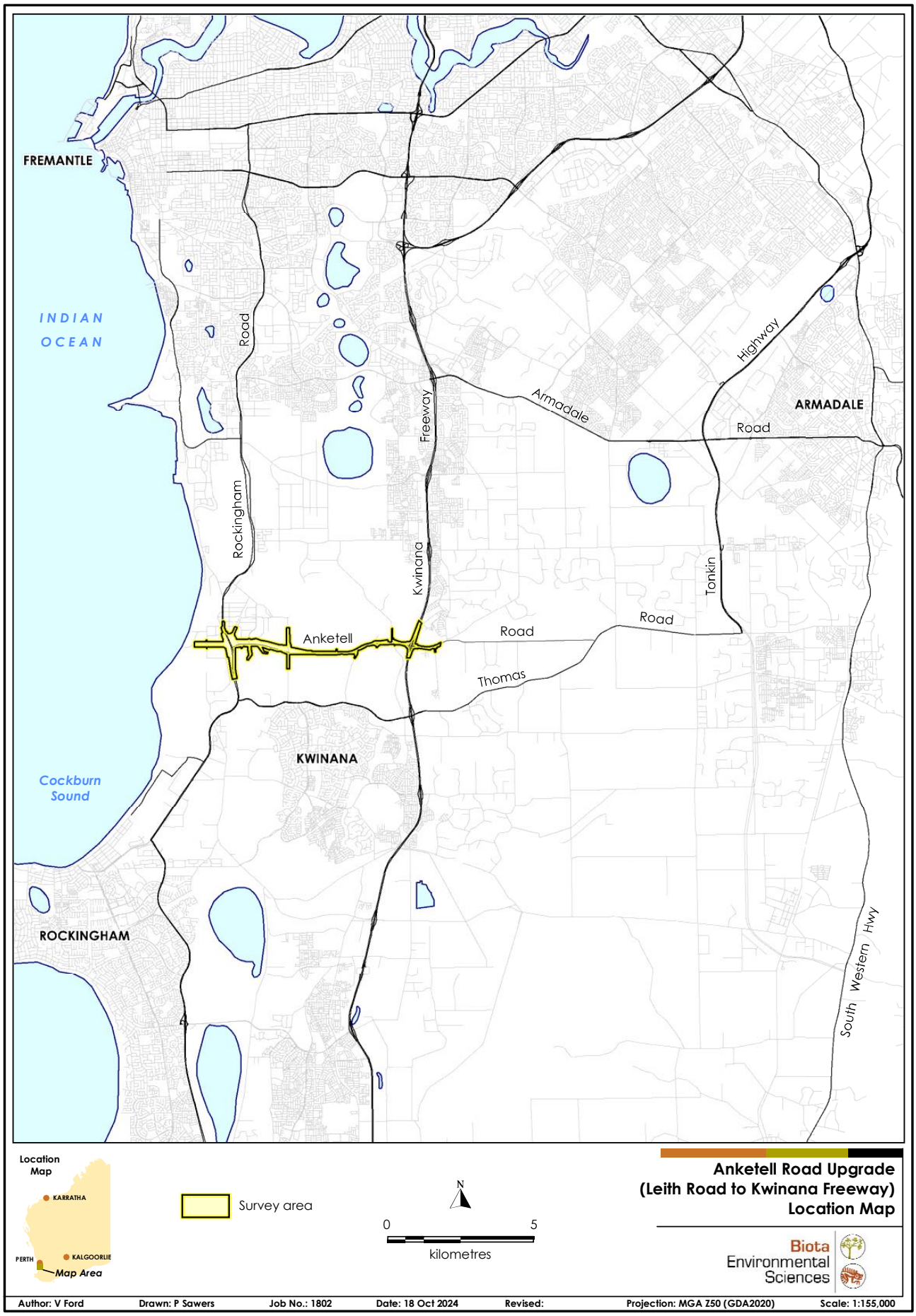

Figure 2.1: Location of the Referral area.

3.0 Methods

3.1 Compliance with Regulatory Requirements

Our proposed approach and methodology was prepared giving consideration to the following guidance and information:

- Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2020);
- Environmental Factor Guideline – Terrestrial Fauna (EPA 2016);
- Survey guidelines for Australia's threatened mammals (DSEWPaC 2011); and
- Chuditch *Dasyurus geoffroii* Recovery Plan (DEC 2012).

3.2 Timing and Conditions

3.2.1 Timing

Long-term cameras were deployed in January and February 2024; 04/01/2024 (five sites), 29/01/2024 (five sites) and 19/02/2024 (one site). Cameras remained at sites until 18/06/2024.

In the south-west and wheatbelt, Chuditch are seasonal breeders. Females enter oestrus, and mating occurs, in late April to early July (DEC 2012). The gestation period is 17-18 days, young remain in the pouch for around 61 days, by 16 weeks juveniles are well furred and then at approximately 24 weeks they are fully weaned and typically disperse, after summer.

Cameras were deployed in January at a time when young are dispersing and then left on-site until June to include the mating season when males are roaming. Cameras were, therefore, in the field to span the times of greatest individual movement and potential to be within the survey area, particularly in the event that it is being used transiently only.

3.2.2 Weather and Climate

Long-term monthly mean rainfall, maximum temperature and minimum temperature data from the Bureau of Meteorology's Jandakot aero station (009172), located 13 km north of the Referral area are presented in Figure 3.1. Alongside the long-term data are the monthly averages for the year preceding the survey and the months of the survey.

Total rainfall for the year preceding the survey was considerably lower than average (January 2022 – December 2023 total 597 mm versus long-term average of 812 mm; Figure 3.1). This is likely to have had some impact on the number of young reared successfully.

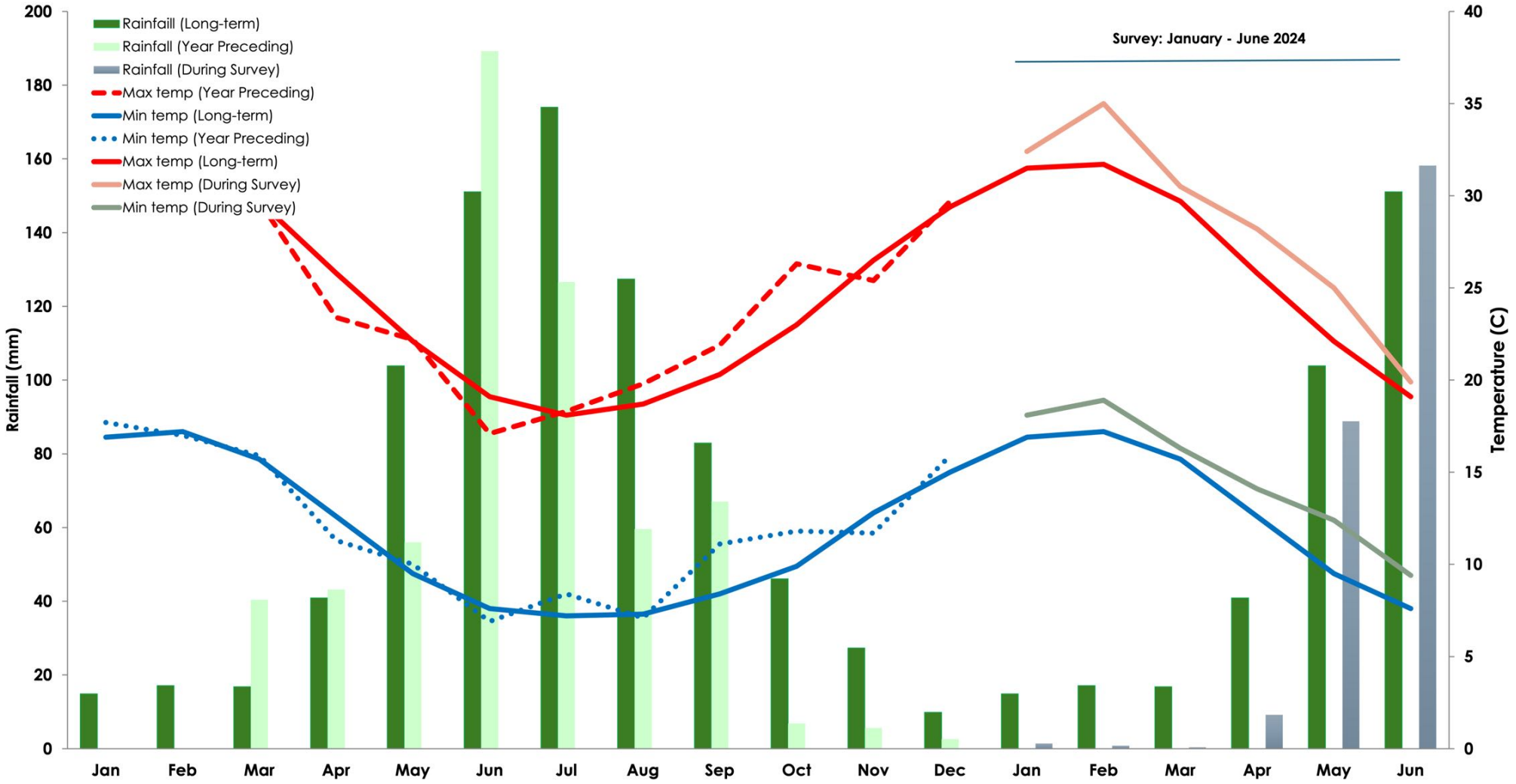

Figure 3.1: **Weather and climate data from Jandakot aero (Bureau of Meteorology station 009172).**

3.3 Long-term Camera Site Selection

Consistent with habitat preferences of the Chuditch, most sites were placed in Jarrah woodland habitat where available or otherwise Banksia and Tuart woodlands as available within the Referral and contextual areas. Full site details are provided in Table 3.1 and photographs of habitat types presented in Plate 3.1 – Plate 3.12.

Cameras were mounted at a height of approximately 1.2 m facing downward. This orientation was chosen as studies on Northern Quoll have found this optimises spot pattern analysis to identify individuals. Bushnell Trophy Cam HD (Aggressor no glow) and Reconyx Hyperfire 2 cameras were used in combination with long-lasting lithium batteries. Cameras were baited with universal bait (peanut butter and oats), together with chicken and truffle oil. Bait was placed into a secured PVC cannister with holes so that bait was accessible for consumption but not easily taken. This baiting system has a proven effectiveness of more than two months and so, bait cannisters were replaced every two months or less.

Five camera sites were placed within the Referral area for a total of 621 trap-nights while six camera sites were placed within nearby Jandakot Regional Park and Beeliar Regional park for a total of 630 trap nights (Table 3.1, Figure 3.2).

Table 3.1: Camera site detail.

Site	Locality	Latitude	Longitude	Camera Model	Habitat	Start Date	End Date	Days Active	Total Effort (trap-nights)
WRF01MC	Referral	-32.207573	115.788036	Bushnell Color Viewer	Tuart woodland over *Acacia, Xanthorrhea*	29/1/2024	18/6/2024	141	141
WRF02MC	Referral	-32.210811	115.807922	Bushnell Color Viewer	Open Tuart woodland over *Acacia*, *Xanthorrhoea* and *Macrozamia*	29/1/2024	27/2/2024	29	109
				Bushnell Trophy Cam HD (Aggressor no glow)		27/2/2024	17/5/2024	80	
WRF03MC	Referral	-32.211975	115.821544	Reconyx Hyperfire 2 (HF2X)	Tuart, Sheoak and *Banksia* woodland over *Kunzea* and *Acacia* shrubland	29/1/2024	27/2/2024	29	89
				Bushnell Trophy Cam HD (Aggressor no glow)		27/2/2024	27/4/2024	60	
WRF04MC	Referral	-32.211015	115.829392	Reconyx Hyperfire 2 (HF2X)	Mixed Tuart, Jarrah and *Banksia* woodland over *Jacksonia* and *Acacia*	29/1/2024	27/2/2024	29	141
				Bushnell Trophy Cam HD (Aggressor no glow)		27/2/2024	18/6/2024	112	
WRF07MC	Referral	-32.210325	115.856267	Bushnell Color Viewer	Jarrah, Sheoak and *Banksia* woodland over *Kunzea*, *Jacksonia* and *Hibbertia*	29/1/2024	27/2/2024	29	141
				Bushnell Trophy Cam HD (Aggressor no glow)		27/2/2024	18/6/2024	112	
						Sites in Referral area Subtotal			**621**
WRF05MC	Beeliar RP	-32.216411	115.830491	Bushnell Trophy Cam HD (Aggressor no glow)	Low open *Banksia* woodland over *Jacksonia*, *Macrozamia* and *Acacia*	4/1/2024	-	Null	Null
WRF05BMC	Beeliar RP	-32.216265	115.830578	Reconyx Hyperfire 2 (HF2X)		16/4/2024	18/6/2024	63	63
WRF06MC	Beeliar RP	-32.210167	115.846126	Bushnell Trophy Cam HD (Aggressor no glow)	Jarrah and *Banksia* woodland over *Kunzea* and *Hibbertia*	4/1/2024	-	Null μ	9
				Bushnell Trophy Cam HD (Aggressor no glow)		27/2/2024	7/3/2024	9 Ψ	
WRF08MC	Jandakot RP	-32.204153	115.877581	Bushnell Trophy Cam HD (Aggressor no glow)	Jarrah, *Banksia* and Sheoak woodland over *Xanthorrhoea, Kunzea*, *Jacksonia*, *Adenanthos*	4/1/2024	27/2/2024	54	166
				Reconyx Hyperfire 2 (HF2X)		27/2/2024	22/5/2024	112	
WRF09MC	Jandakot RP	-32.206736	115.896662	Bushnell Trophy Cam HD (Aggressor no glow)	Banksia, Sheoak, *Nuytsia* over *Kunzea*, and *Hibbertia* shrubland	4/1/2024	27/2/2024	54	166
				Reconyx Hyperfire 2 (HF2X)		27/2/2024	16/6/2024	112	
WRF10MC	Jandakot RP	-32.205055	115.908278	Bushnell Trophy Cam HD (Aggressor no glow)	Banksia woodland over *Kunzea*, *Hibbertia* and *Macrozamia*	4/1/2024	27/2/2024	54	166
				Reconyx Hyperfire 2 (HF2X)		27/2/2024	17/6/2024	112	

Site	Locality	Latitude	Longitude	Camera Model	Habitat	Start Date	End Date	Days Active	Total Effort (trap-nights)
WRF11MC	Beeliar RP	-32.215608	115.850542	Reconyx Hyperfire 2 (HF2X)	Jarrah woodland over *Banksia*, *Acacia*, *Macrozamia* and *Hibbertia*	19/2/2024	19/4/2024	60	60
						Contextual sites Subtotal			**630**
						All sites total			**1251**

μ Camera SD card stolen

ψ Camera malfunction

Plate 3.1: Camera site WRF01MC.

Plate 3.2: Camera site WRF02MC.

Plate 3.3: Camera site WRF03MC.

Plate 3.4: Camera site WRF04MC.

Plate 3.5: Camera site WRF05MC.

Plate 3.6: Camera site WRF05BMC.

Plate 3.7: Camera site WRF06MC.

Plate 3.8: Camera site WRF07MC.

Plate 3.9: Camera site WRF08MC.

Plate 3.10: Camera site WRF09MC.

Plate 3.11: Camera site WRF10MC.

Plate 3.12: Camera site WRF11MC.

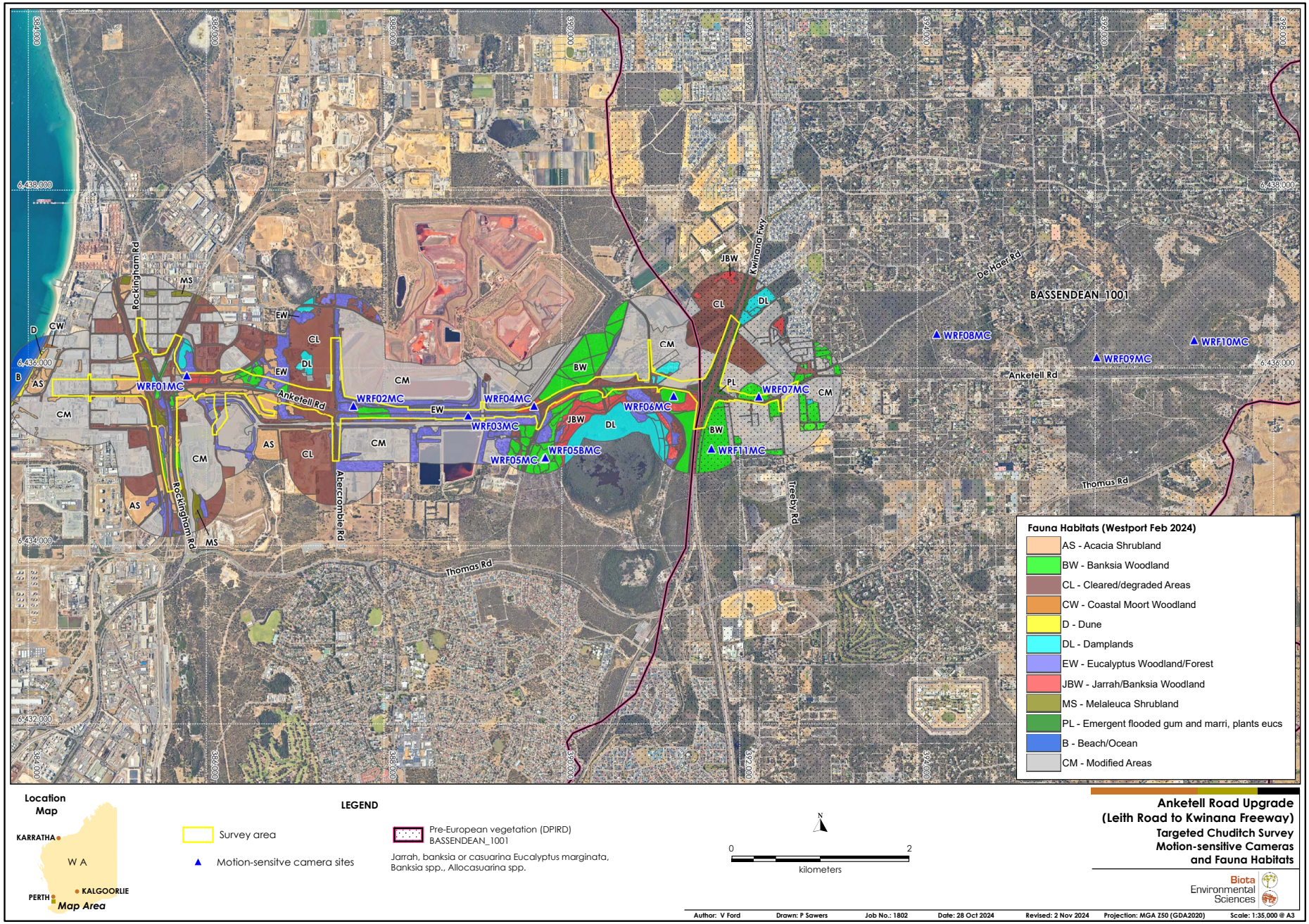

Figure 3.2: Location of 6-month camera sites.

3.4 Personnel and Permits

The study was conducted with the following permits:

- Authorisation to take or disturb threatened species (Section 40 of the Biodiversity Conservation Act 2016) Authorisation Number TFA 2324-0152.
- Regulation 4: A lawful authority applicable to Regulations 4 and 35A of the Conservation and Land Management Regulations 2002.
- Regulation 27, Biodiversity Conservation Regulations 2018: Fauna taking biological assessment licence (licence number BA27000976).
- WA Ethics Committee (Department of Primary Industries and Regional Development) permit number 23-04-08.

Copies of these authorities have been included as Appendix 1.

Roles and experience of the project team are detailed in Table 3.2.

Table 3.2: Study team and their experience.

Name	Position	Qualification	Years of Experience	Survey Role
Victoria Ford	Principal Zoologist	PhD (Zoology), BSc (Hons)	14	Project manager
Michael Greenham	Senior Biologist	BSc (Zoology and Botany)	20	Field team lead
Ryan Boyer	Graduate Biologist	BSc (Zoology and Cons. Biol.)	3	Field team member

3.5 Potential Limitations

In accordance with the EPA Technical Guidance 'Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment' (EPA 2020), potential constraints and limitations of this biological survey were considered as shown in Table 3.3.

Table 3.3: Potential constraints and limitations of the fauna survey.

Potential Constraint	Statement of Limitations
1. Availability of contextual information at a regional and local scale	• Extensive previous survey work has been undertaken in the locality, including studies previously completed in the survey area (Biota 2021, 2022, 2024). Contextual information was readily available at the locality scale. • Contextual information was not considered a limitation for the study.
2. Competency/ experience of the team carrying out the survey, including experience in the bioregion surveyed	• Site selection was conducted by a Senior Biologist who has worked in the locality on several previous occasions, knew the habitats well and has conducted numerous previous surveys targeting the Chuditch. • Site maintenance, rebaiting and SD card replacement was conducted by a Senior or Graduate Biologist. • Competency was not considered to be a limitation.

Potential Constraint	Statement of Limitations
3. Proportion of species recorded and/or collected, any identification issues	• As is common with imagery from motion-cameras, some smaller skinks and mammals could not be identified to species. These have been indicated in the results. However, we are confident based on previous quoll targeted work that they would be attracted to the bait, triggered the camera and be identifiable if present. • Overall, identification and proportion of species recorded was not considered to be a limitation given the objective of the survey.
4. Appropriate area fully surveyed (effort and extent)	• The fauna survey targeted a specific species. The Referral area was surveyed thoroughly for its likelihood to support the Chuditch. • Survey effort and extent were not considered to be limitations.
5. Access restrictions within the survey and contextual areas	• Much of the survey area consisted of private freehold land. In all cases permission to access privately-owned areas was granted to Main Roads for the current survey. • Vehicle access was available over much of the Referral area with relatively short foot traverses required. • Access was not considered to be a limitation.
6. Survey timing, rainfall, season of survey	• The camera-trapping study was designed to span a 6-month period encompassing periods of greatest activity in Chuditch; mating and dispersal of young. • The year preceding the survey received considerably lower rainfall than average and may have impacted activity and fecundity; however, not overall capacity to detect the presence of a population. • Survey timing was optimal but dry conditions may have presented a minor limitation to the study.
7. Disturbance that may have affected the results of survey such as fire, flood or clearing	• Large areas of land clearing and disturbance were present throughout the survey area, which reduced habitat quality for Chuditch but not capacity to conduct the survey. • Disturbance was not considered to be a limitation.

4.0 Results

4.1 Recorded Assemblage

A total of 30 vertebrate species were recorded via motion camera (Figure 3.2): six native and six introduced mammals, 14 native bird species including the introduced Laughing Kookaburra and four reptile species. There were twenty species recorded within the Referral area and 17 from contextual sites.

The species recorded at each site, and whether the site was located within the Referral area or contextual areas, are detailed in Table 3.1. For each species the number of days it was recorded is shown.

Table 4.1: Species list and number of days recorded at each site

		Referral					Contextual						
Species	**Common Name**	**WRF01**	**WRF02**	**WRF03**	**WRF04**	**WRF07**	**WRF05**	**WRF05B**	**WRF06**	**WRF08**	**WRF09**	**WRF10**	**WRF11**
Mammals													
Phascogale tapoatafa wambenger	Wambenger Brush-tailed Phascogale										9	30	
Isoodon fusciventer	Quenda	62	36	18	14	25	1	18	8	2			3
Tarsipes rostratus	Honey Possum											1	
Trichosurus vulpecula	Common Brushtail Possum	46	2	16	30	5				2	21	27	4
Macropus fuliginosus	Western Grey Kangaroo	1				1				3	12	3	
Notamacropus irma	Western Brush Wallaby									1			
Canis familiaris	Dog/Dingo					7					1		
Vulpes vulpes	Red Fox									1	2		
Felis catus	Cat	2	1										
*Mus musculus***	House Mouse				26			16					
Rattus sp.**	Rat	40	19	14	44			2	4			1	2
Oryctolagus cuniculus	Rabbit	1				49							
Birds													
Phaps chalcoptera	Common Bronzewing									1		2	
Malurus splendens	Splendid Fairywren				5								
Gavicalis virescens	Singing Honeyeater				1								
Anthochaera lunulata	Western Wattlebird											2	
Anthochaera carunculata	Red Wattlebird		1										
Gymnorhina tibicen	Australian Magpie									1	6	32	
Cracticus torquatus	Grey Butcherbird		2										

		Referral					Contextual						
Species	**Common Name**	**WRF01**	**WRF02**	**WRF03**	**WRF04**	**WRF07**	**WRF05**	**WRF05B**	**WRF06**	**WRF08**	**WRF09**	**WRF10**	**WRF11**
Strepera versicolor	Grey Currawong			1									
Coracina novaehollandiae	Black-faced Cuckooshrike									7			
Colluricincla harmonica	Grey Shrikethrush		3		1	2							
Rhipidura leucophrys	Willie Wagtail		7										
Rhipidura albiscapa	Grey Fantail			2									
Corvus coronoides	Australian Raven											1	
Zosterops lateralis	Silvereye	3			1								
Dacelo novaeguineae	Laughing Kookaburra		1										
Reptiles													
Cryptoblepharus sp.*	Fence Skink		4	1	14	2					1		
Tiliqua rugosa	Bobtail Skink	2	1	1	2			1	3			2	
Varanus rosenbergi	Heath Goanna									3			
Pseudonaja affinis	Dugite					1							

* ID uncertain. Identifying small reptiles and mammals can be difficult from motion camera imagery. *Cryptoblepharus* sp. is based on known distribution and perceived likelihood of occurrence in this area in addition to captured footage and expert discretion.

** There is low confidence in identifying juvenile rats (*Rattus* sp.*)* and mice (*Mus musculus*).

4.2 Significant Species

Three mammals of significance were recorded from the motion camera array:

- Quenda (*Isoodon fusciventer*) (Department of Biodiversity, Conservation and Attractions (DBCA) Priority 4) was recorded within both the Referral area and at contextual sites;
- Wambenger Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) (*Biodiversity Conservation Act 2016* (BC Act) Conservation Dependent) was recorded at contextual reserve sites WRF09MC and WRF10MC within Jandakot Regional Park;
- Western Brush Wallaby (*Notamacropus irma*) (DBCA Priority 4) was recorded from one contextual site (WRF08MC) within mixed Jarrah, Sheoak and Banksia woodland.

Each of these is discussed in more detail in Section 4.2.1 - 4.2.3.

4.2.1 Quenda DBCA Priority 4

The Quenda (*Isoodon fusciventer*) is a DBCA Priority 4 species. It is a medium-sized ground-dwelling marsupial that is territorial. Breeding in this species is opportunistic, beginning in winter and peaking in spring, and lasting 6 – 8 months. The species constructs a nest of ground litter over a shallow depression next to or under logs, shrubs or debris piles. It is mostly nocturnal, but is sometimes active during the day when it searches for invertebrates, fungi and subterranean plant material (van Dyck and Strahan 2008, van Dyck et al. 2013).

It is patchily distributed, occurring along the Swan Coastal Plain and in Jarrah and Karri forests from just north of Perth to east of Esperance. It occurs in habitats with sandy soil supporting dense vegetation in the lower strata. Along the Swan Coastal Plain, the species is often associated with wetlands (van Dyck and Strahan 2008, van Dyck et al. 2013).

Likelihood occurrence in Referral area: Quenda was one of the most commonly recorded species in this study (Plate 4.1). It was recorded at all sites within the Referral area and at five of the seven contextual sites. The only two sites where Quenda were not recorded were contextual sites WRF09 and WRF10 within the Jankdakot Regional park. These sites both had relatively open understoreys (Plate 3.10 and Plate 3.11), which is not preferred by the species.

4.2.2 Wambenger Brush-tailed Phascogale BC Act Conservation Dependent

The Wambenger subspecies of Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) is listed as Conservation Dependent Fauna under the BC Act and is considered dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. The species *Phascogale tapoatafa* has a patchy distribution around the coast of Australia and is of conservation concern over much of its distribution.

The south-west population was described as the distinct subspecies of Wambenger in 2015 (Aplin et al. 2015) and is distributed between Perth and Albany. It occurs at low densities in the northern Jarrah Forest, with the highest densities occurring in the Perup/Kingston area, Collie River valley, and near Margaret River and Busselton (DBCA 2012). The subspecies has been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover. Brush-tailed Phascogales are nocturnal arboreal carnivores that forage for food under the bark of trees (van Dyck and Strahan 2008).

Likelihood occurrence in Referral area: Wambenger Brush-tailed Phascogale were recorded at two contextual sites in Jandakot Regional Park (WRF09 and WRF10; Plate 4.2) but not within the Referral

area. Consistent with known habitat preferences, both sites where the species was recorded supported woodlands with sparse ground cover (Plate 3.10 and Plate 3.11). The record was particularly notable given the scarcity of records of the species in the local area. The Anketell Road Planning Study Biological Study (Biota 2022) included a desktop study conducted over a 5 km radius on the Referral area, which returned no records of the Wambenger Brush-tailed Phascogale and there are only three historical records of the species from 5 – 10 km of the Referral area, the closest being a record from Oldbury (7 km south, date unknown) (DBCA Threatened and Priority Fauna database).

The Wambenger Brush-tailed Phascogale is considered unlikely to occur within the Referral area given that it was not recorded following the substantial effort of 512 camera trap-nights in suitable habitat in the current study, nor in previous studies, including 26 trap-nights in suitable habitat within the Referral area (Biota 2024). It is possible, but still unlikely, that the subspecies would occur in the portion of the Referral area that is continuous with the Beeliar Regional Park on the eastern side of Kwinana Freeway (Biota 2024).

Suitable eucalypt woodland habitat inclusive of hollow-bearing trees occurred within the Referral area (e.g. E1, E6, EB1 vegetation units totalling 40.1 ha, Biota 2024) but was largely constrained to the road reserve and had little continuity outside the Referral area, where much of the surrounding land has been cleared historically (Figure 3.2). Given the species is generally sparse even in high quality habitat (van Dyck and Strahan 2008) it is less likely to occur in the small patches of eucalypt woodland in the Referral area.

4.2.3 Western Brush Wallaby DBCA Priority 4

The Western Brush Wallaby (*Notamacropus irma*) is a pale grey wallaby with a very distinct white facial stripe, black and white ears, black hands and black feet. This species is endemic to the south-west of Western Australia, where it is distributed from north of Kalbarri to near Cape Arid. It occurs in a wide range of habitats, including open forest and woodland, mallee, heathland, low open grasslands and thickets (Woinarksi and Burbidge 2016). It is absent from Karri forests with dense undergrowth.

Historically, population declines have been caused by poachers trading skins, the introduction of the Red Fox, and clearing of habitat for agriculture. Foxes are still a threat to the survival of this species, with juveniles most at risk of predation. Where Red Fox control has been implemented, there have been substantial recoveries in numbers.

Likelihood occurrence in Referral area: The Western Brush Wallaby was recorded once at contextual site WRF08 in Wandi Nature Reserve (Jandakot Regional Park; Plate 4.3). Habitat at this site was a mixed woodland of Jarrah, Banksia and Sheoak over an open shrubland of *Xanthorrhoea* and *Kunzea* as well as scattered *Jacksonia*, *Adenanthos* and *Hibbertia*.

Plate 4.1: **Quenda at site WRF06.**

Plate 4.2: **Wambenger Brush-tailed Phascogale at site WRF10.**

Plate 4.3: **Western Brush Wallaby at site WRF08.**

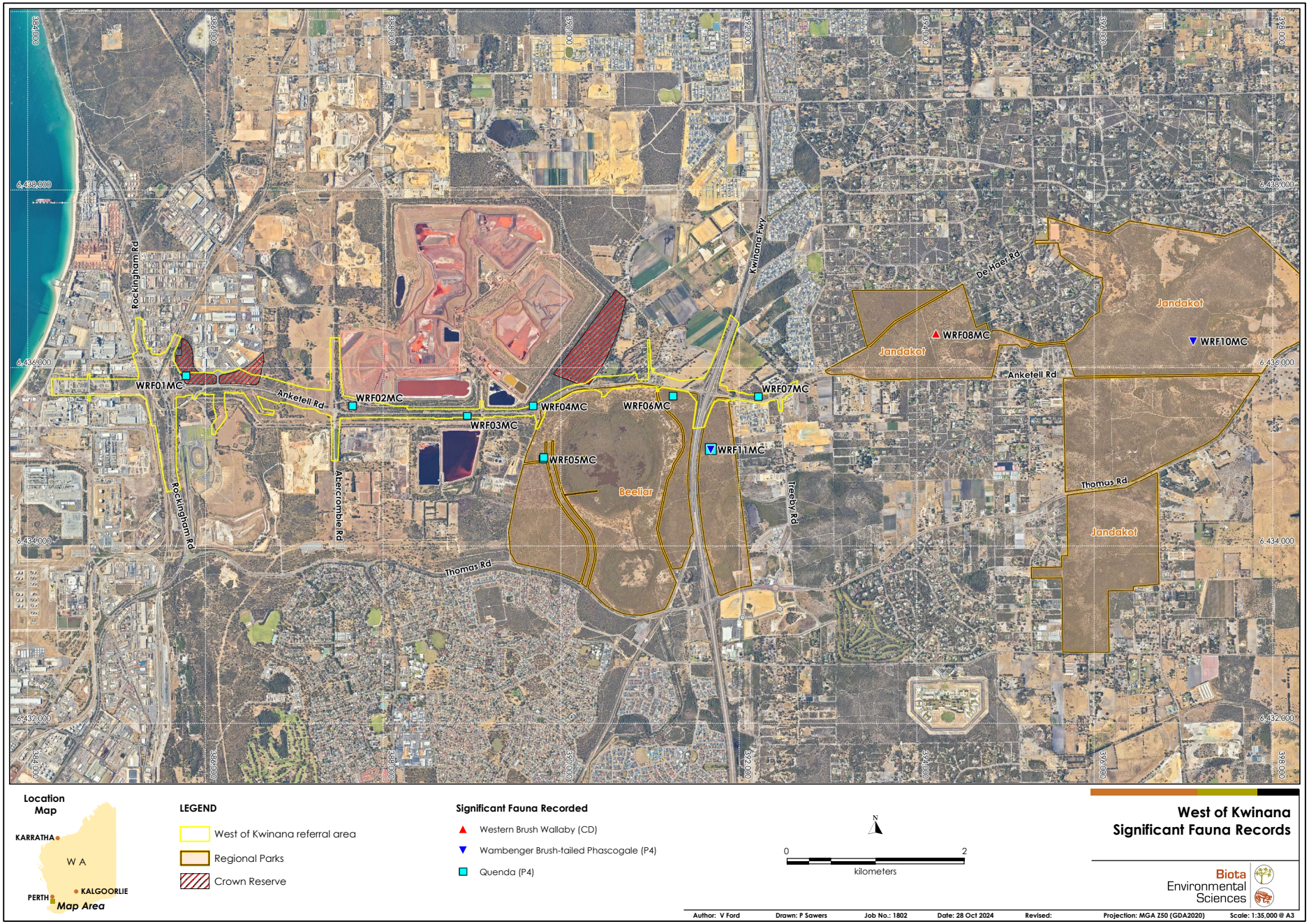

Figure 4.1: **Records of significant fauna from the current survey.**

4.3 Other Notable Records

The Honey Possum (*Tarsipes rostratus*) is a tiny nectivorous marsupial and the only member of the Tarsipedidae family. The Honey Possum was recorded from contextual site WRF10MC within Jandakot Regional Park on one day only. While the survey area is well within the range of the distribution of the species (Baker and Gynther 2023), it is relatively rarely recorded in urban bushland remnant settings. For example, the study of How and Dell (2000) across 34 vegetation remnants on the Swan Coastal Plain recorded the species only once.

Plate 4.4: **Honey Possum *Tarsipes rostratus* at site WRF10.**

4.4 Introduced Feral Predators

Introduced feral predators were relatively uncommon during the study. The Dog was recorded at a single site within each of the Referral and contextual areas. The Red Fox was recorded at two sites and only on a total of three days in the contextual areas, none were recorded within the Referral area. The Cat was recorded at two sites within the Referral area on a total of three days but was not recorded from contextual sites.

5.0 Discussion

5.1 Chuditch Significant Impact Risk Assessment

Here we address each of the three steps taken in assessing the potential for the Project to represent significant impact to the Chuditch. Following on from this assessment is a direct appraisal of each of the significant impact criteria (Department of the Environment 2013).

5.1.1 Likelihood of Occurrence within the Referral Area

The Chuditch was not recorded in the Referral area where five camera sites totalled 621 trap-nights over a six-month period, nor was it recorded at six contextual sites across Jandakot Regional Park and Beeliar Regional Park totalling 630 trap-nights.

Furthermore, the Chuditch was not recorded during previous studies within the Referral area that included 26 camera-trap nights in potential Chuditch habitat, as well as extensive foot traverses in search of secondary evidence (Biota 2024). Additional pre-planning studies incorporated many short-term camera sites in the local area during spring 2020, summer 2020, and spring of 2022 including sites within Jandakot and Beeliar Regional Parks (Figure 5.1) providing and additional 71 nights of contextual effort (Biota 2021, 2022, 2023). The Chuditch was also not recorded in these studies. Taken together, these results strongly indicate that there is no resident population in the area.

As a result, the Chuditch was assessed as very unlikely to occur within the Referral area with no evidence of a population occurring even in the larger reserves nearby, Jandakot Regional Park and Beeliar Regional Park.

When considering the significant impact criteria for Vulnerable species (Table 5.2), the definition of 'important population' is as follows:

"a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are: (i) key source populations either for breeding or dispersal, (ii) populations that are necessary for maintaining genetic diversity, and/or (iii) populations that are near the limit of the species range" (Department of the Environment 2013).

In relation to this definition, the current study and previous studies (Biota 2021, 2022, 2023) have found no evidence of any individuals in the Referral area or in nearby regional parks where it has been recorded twice historically. As such, no important population is considered present.

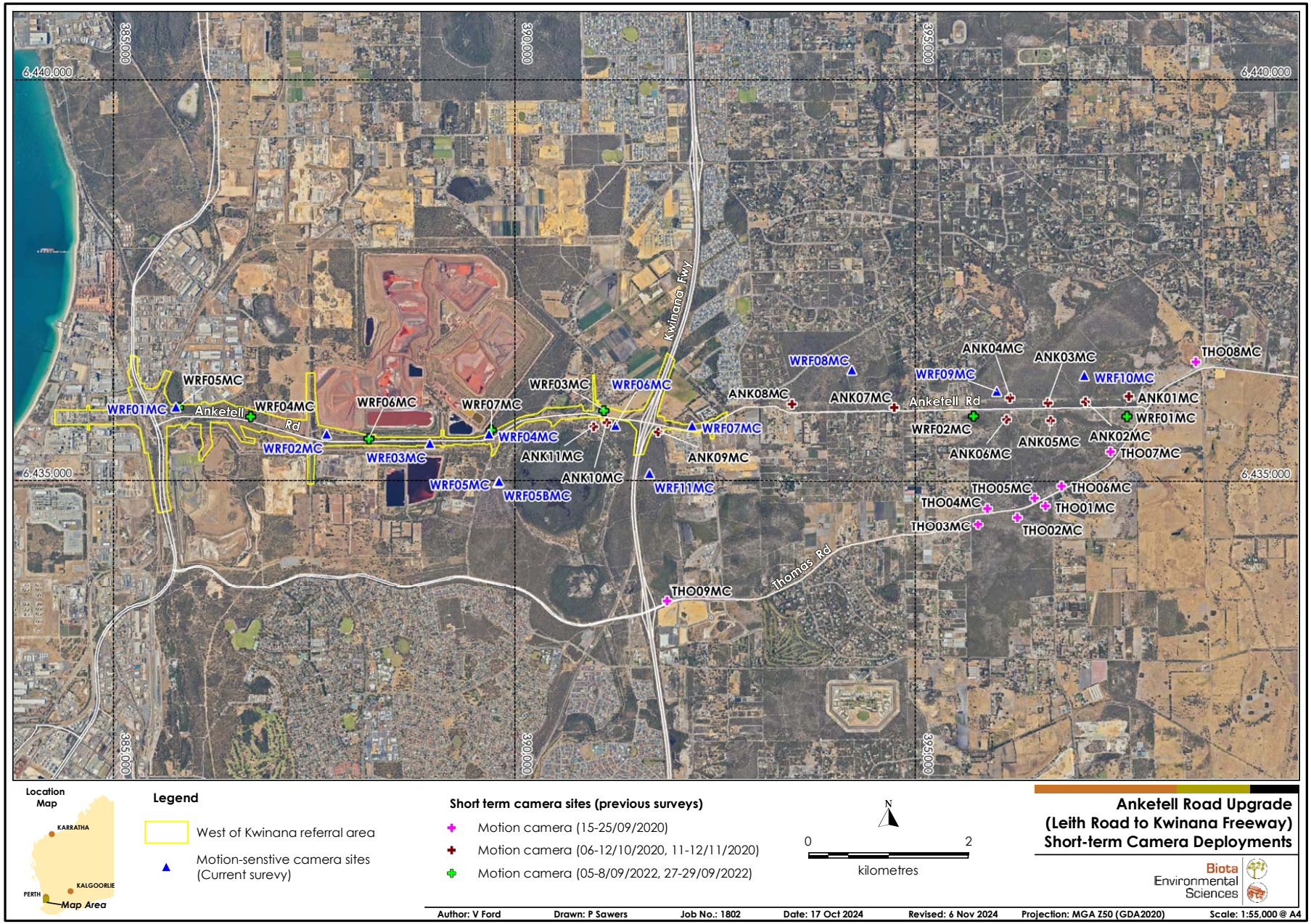

Figure 5.1: **Collated camera sites from the current and previous studies in relation to the Referral area.**

5.1.2 Habitat Use

The results of the survey indicate no resident population but also that very little vegetation within the referral area represents core habitat for Chuditch. This is particularly the case west of the Kwinana Freeway, which in and of itself represents a considerable barrier to movement from the east, but has also isolated remnant areas of suitable habitat (Jarrah woodland vegetation units E1 and EB1 totalling 38.8 ha in the Referral area Biota 2024), with much of the area north and south of Anketell Road historically cleared and now occupied by significant infrastructure (Figure 3.2).

The portion of the Referral area east of the Kwinana Freeway and south of Anketell Road, continuous with The Spectacles (Beeliar Regional Park) represents a locality of possible occurrence for the Chuditch, given the historical record of the species from bushland in this area. Within the Referral area in this location the vegetation comprised *Banksia menziesii* and *B. attenuata* woodland (veg. unit B2, Biota 2024) with the occasional Jarrah tree scattered throughout. Even occurrence in this portion of the Referral area must be considered unlikely given the lack of evidence of any population in the locality.

Consideration of records over the wider area illustrates the rarity of records, especially west of the Darling scarp (Figure 5.2). We see a small number of contemporary records scattered throughout some of the larger remnants remaining in this largely cleared area of the Swan Coastal Plain, including the Lowlands Nature Reserve in Maradella and Paganoni Swamp in Karnup (Figure 5.2).

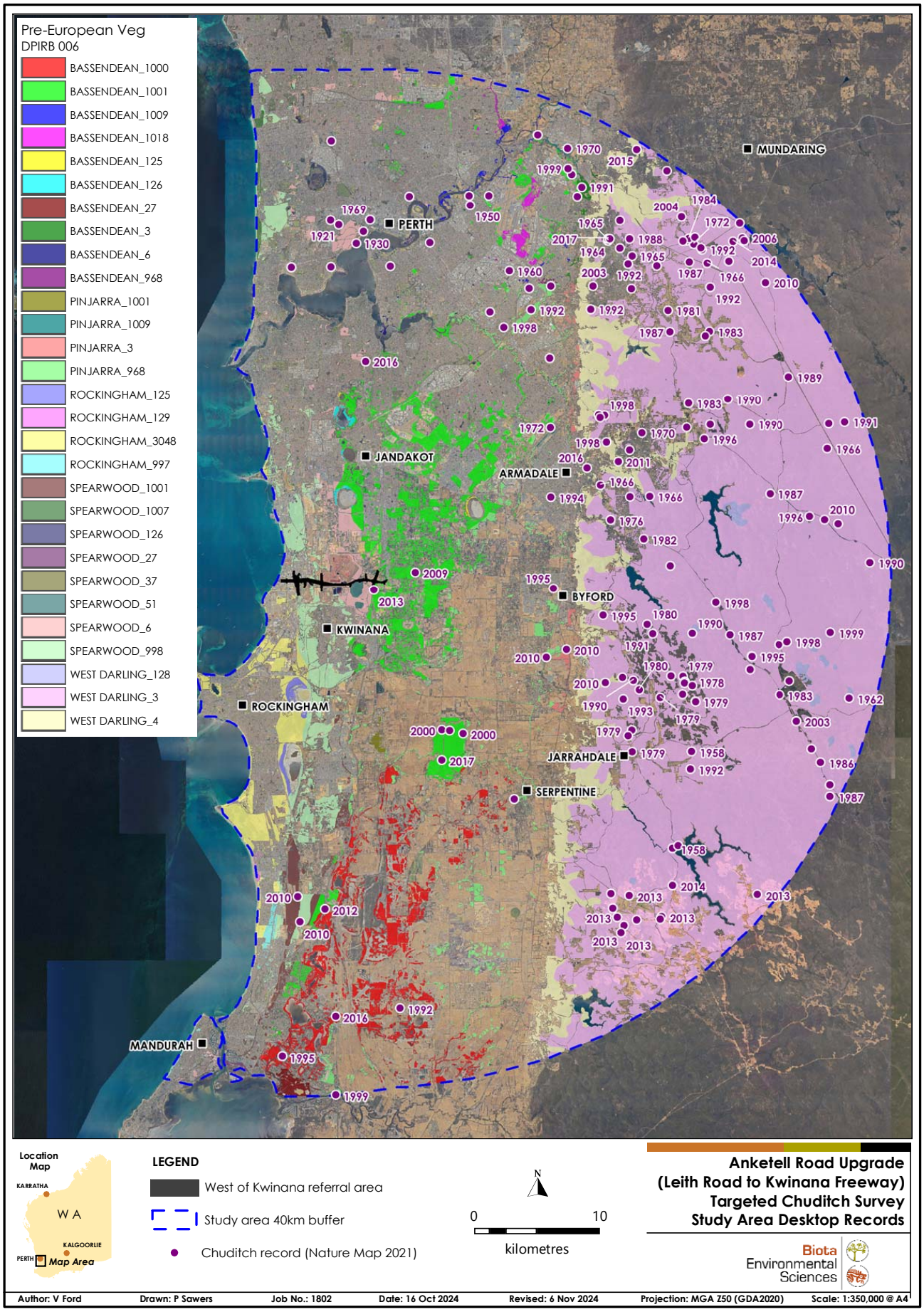

Figure 5.2: **Chuditch records within 40 km displayed with current remnant vegetation extent of pre-European vegetation mapping (Beard 1979).**

Consistent with significant impact guideline recommendations, the definition of "habitat critical to the survival of the species" for Chuditch was obtained from the Chuditch (*Dasyurus geoffroii*) National Recovery Plan (DEC 2012) and evaluated in the context of the Referral area (Table 5.1).

Table 5.1: Recovery Plan definitions of habitat critical to survival (DEC 2012).

Criteria	Referral area	Notes
Areas currently occupied by Chuditch.	No	No population evident.
Areas of natural vegetation in which Chuditch breed.	No	No population evident.
Areas of natural vegetation in which Chuditch forage.	Unlikely	No population evident but historical records indicate that it is possible that the Chuditch may visit the area east of Kwinana Freeway and south of Anketell Road as a foraging visitor.
Areas of natural vegetation that Chuditch use to move from one area to another.	No	The only area of potential occurrence is bordered by the Kwinana Freeway.
Areas of suitable vegetation within the recorded range in which undiscovered Chuditch populations may exist.	No	Chuditch are rare in the wider area and a six-month study failed to record the species. Furthermore, the Referral area supports very little habitat for the species.
Areas not currently occupied by Chuditch due to recent fire but are capable of supporting Chuditch populations when sufficiently recovered.	Not relevant	A fire south of Anketell and west of Kwinana Freeway in Dec 2023 did not affect the Referral area or areas nearby the contextual sites.
Areas previously occupied and that still provide suitable habitat and into which Chuditch can be reintroduced.	No	No suitable habitat for reintroduction occurs within the Referral area which is directly adjacent to two major roads – Anketell Road and Kwinana Freeway.

5.1.3 Risk Assessment

Based on the lack of population or even transient individuals evident during the current survey (Section 5.1.1) and the habitat present (Section 5.1.2), none of the impact criteria relevant to a species listed as Vulnerable under the EPBC Act (Department of the Environment 2013) were triggered (Table 5.2).

Table 5.2: Review of significant impact criteria for the Chuditch (Vulnerable EPBC Act) in relation to the Project.

Criteria	Likely?	Notes
Lead to a long-term decrease in the size of an important population of a species	No	No population present.
Reduce the area of occupancy of an important population	No	No population present.
Fragment an existing important population into two or more populations	No	No population present.
Adversely affect habitat critical to the survival of a species	No	No population is present and unlikely transient use of habitat east of Kwinana Freeway would not represent core habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population	No	No population present.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No	No population present.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?	No	The species is very unlikely to occur within the Referral area.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No	The Project is an expansion of an existing road so not introducing new access for invasive species.
Introduce disease that may cause the species to decline	No	No diseases specifically afflicting the Chuditch are known. The project will not be introducing any new pathways for species from other areas to come into the local area.
Interfere substantially with the recovery of the species	No	No population present.

5.2 Notable records

The record of both the Wambenger Brush-tailed *Phascogale tapoatafa wambenger* (BC Act Conservation Dependent) and the Western Brush Wallaby *Notamacropus irma* (DBCA Priority 4) were particularly notable with neither having previously been recorded from the Jandakot Regional Park. This was an encouraging result as native mammals are often the most disadvantaged vertebrates in urban remnants with few species surviving the effects of long-term fragmentation (How and Dell 2000).

Records of the Honey Possum and Western Brush Wallaby on only one day of the six month camera-trapping demonstrates the advantages long-term camera-trapping can bring, as it is likely that short-term camera work or trapping would not have recorded these species.

6.0 References

Aplin, K. P., S. G. Rhind, J. Ten Have, and R. T. Chesser (2015). Taxonomic revision of *Phascogale tapoatafa* (Meyer, 1793) (Dasyuridae; Marsupialia), including descriptions of two new subspecies and confirmation of *P. pirata* Thomas, 1904 as a 'Top End' endemic. *Zootaxa* 4055.

Baker, A., and I. Gynther (2023). *Strahan's Mammals of Australia*, 4th edition. Reed New Holland Publishers, Sydney, NSW.

Beard, J. S. (1979). Vegetation Survey of Western Australia, 1:250,000 Series, The Vegetation of the Perth Area. Vegmap Publications, Applecross.

Biota (2021). Thomas Road Planning Study Biological Survey. Unpublished report prepared for Main Roads Western Australia, December 2021, Biota Environmental Sciences, Leederville, Western Australia.

Biota (2022). Anketell Road Planning Study Biological Survey. Unpublished report prepared for Main Roads WA, January 2022, Biota Environmental Sciences, Leederville, Western Australia.

Biota (2023). Westport Freight Road Additional Biological Survey. Unpublished report prepared for Main Roads WA, March 2023, Biota Environmental Sciences, Western Australia.

Biota (2024). Anketell Road Upgrade Consolidated Biological Survey. Unpublished report prepared for Main Roads WA, March 2024, Biota Environmental Sciences, West Perth, WA.

DBCA (2012). Fauna Profile: Brush-tailed Phascogale *Phascogale tapoatafa* (Meyer, 1793). Department of Biodiversity, Conservation and Attractions, Perth, WA, Western Australia.

DEC (2012). Chuditch (*Dasyurus geoffroii*) National Recovery Plan. Wildlife Management Program No. 54, Department of Environment and Conservation. Retrieved from http://www.environment.gov.au/biodiversity/threatened/publications/recovery/chuditch/index.html.

Department of the Environment (2013). Matters of National Environmental Significance - Significant Impact Guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Canberra, ACT.

DSEWPaC (2011). Survey Guidelines for Australia's Threatened Mammals: Guidelines for detecting mammals listed as threatened under the EPBC Act. Department of Sustainability, Environment, Water, Population and Communities, Canberra. Retrieved from http://www.environment.gov.au/epbc/publications/threatened-mammals.html.

van Dyck, S., I. Gynther, and A. Baker (Eds.) (2013). *Field Companion to the Mammals of Australia*. New Holland Publishers, Sydney, Australia.

EPA (2016). *Environmental Factor Guideline: Terrestrial Fauna*. Environmental Protection Authority, Western Australia.

EPA (2020). *Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*. Environmental Protection Authority, Western Australia.

How, R. A., and J. Dell (2000). Ground vertebrate fauna of Perth's vegetation remnants: impact of 170 years of urbanization. *Pacific Conservation Biology* 6:198–216.

van Dyck, S., and R. Strahan (Eds.) (2008). *The Mammals of Australia*, 3rd edition. Reed New Holland, Sydney.

Woinarski, J. C. Z., A. A. Burbidge, and P. L. Harrison (2014). *The Action Plan for Australian Mammals 2012*. CSIRO Publishing, Victoria.

Appendix 1 Permits, Authorities and Licenses

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

FAUNA TAKING (BIOLOGICAL ASSESSMENT) LICENCE

Regulation 27, Biodiversity Conservation Regulations 2018

Licence Number: BA27000976-b

Licence Holder: Dr Victoria Anne Ford
Biota Environmental Sciences
Level 4, 46 Colin Street
West Perth WA 6005

Date of Issue: 27/11/2023

Date Valid From: 27/11/2023
Date of Expiry: 30/11/2024

LICENCE AMENDMENTS

Date	Amendment
02/04/2024	Locations

LICENSED ACTIVITIES

Subject to the terms and conditions on this licence, the licence holder may –

1. Undertake terrestrial fauna survey to determine the presence of conservation significant species recorded in the survey area. Findings will inform project planning and environmental impact assessment processes.

   Take invertebrate species through sweep netting. Sweep netting will be undertaken for up to four (4) hours each day across four (4) survey events. Sweep netting will be undertaken during known insects flight times using an entomological net. Passive collections using bee bowls will be used. Bee bowls will consist of four types: fluorescent blue soufflé cups, fluorescent yellow soufflé cups, yellow party bowls and yellow rectangular take-away containers. Each bowl will be filled two-thirds with water, with a few drops of unscented detergent to reduce surface tension. Bowls will be placed on the ground in open, bare patches not obscured by vegetation, with distances between bowls of at least 10 m. The bowls will be set out at the start of each day of survey and collected at the end of each survey day (approximately 5.5 hours). Bowl colours chosen are those known to attract native bees and also correspond to the colours of the host plants of the target native bee species.

   Captured invertebrate specimen may be retained for formal identification. Specimens will be lodged with the Western Australia Museum.

   Disturb fauna through the deployment of camera traps lured with consumable bait.

   All proposed activities will be conducted in accordance with EPA Technical Guidance – Sampling of Short Range Endemic Invertebrates and DBCA Standard Operating Procedures (SOPs) for fauna survey and monitoring techniques.

LOCATIONS

1. Anketell Road and Thomas Road from Tonkin Highway to Rockingham Road including Forrestdale Nature Reserve.

AUTHORISED PERSONS

The following persons or persons of the specified class may assist in carrying out the licensed activities:

1. Victoria Ford
2. Kit Prendergast
3. Michael Greenham
4. Sylvie Schmidt
5. Ryan Boyer

CONDITIONS

1. Fauna must not be taken on CALM land, (as defined in the Conservation and Land Management Regulations 2002*),* unless authorised by a written notice of a lawful authority issued under regulations 4 and 8 of the Conservation and Land Management Regulations 2002.
2. If persons, other than the licence holder, are authorised to carry out/assist in carrying out the activities under the licence, the licence holder must ensure those persons have read and understand the licence terms and conditions.
3. The written authorisation of the person in possession or occupation of the land accessed and upon which fauna is taken, as required under regulation 101(2) and referred to in "Additional information" below, must:
   a) state location details (including lot or location number, street/road, suburb and local government authority);
   b) state land owner or occupier name, and contact phone number;
   c) specify the time period that the authorisation is valid for;
   d) be signed and dated; and
   e) be attached to this licence at all times.
4. This licence, and any written authorisation or lawful authority which authorises the take of fauna on specified locations must be carried at all times while conducting licensed activities and be produced on demand by a wildlife officer.
5. If a species of fauna listed as a threatened species under Section 19 of the *Biodiversity Conservation Act 2016* is inadvertently captured, that species is to be released immediately at the point of capture. If the fauna is injured or deceased, the licence holder shall contact the DBCA Wildlife Licensing Section (wildlifelicensing@dbca.wa.gov.au) for advice on treatment or disposal. Details of any capture of threatened fauna must be included in the "Return of Fauna Taken."
6. The licence holder must not:
   a) release any fauna in any area where it does not naturally occur;
   b) transfer fauna to any other person or authority (other than the Western Australian Museum) unless approved in writing by the CEO; or
   c) dispose of the remains of fauna in any manner likely to interfere the natural or present day distribution of the species.
7. The licence holder must not take and remove more than ten specimens of any one protected species of fauna from any location less than 20km apart. Where exceptional circumstances make it necessary to take a larger number of specimens from a particular location in order to obtain adequate statistical

data, the collector must proceed with circumspection and justify their actions to the Director General in advance.

8. All holotypes and syntypes and a half share of paratypes of species or subspecies permitted to be permanently taken under this licence must be donated to the Western Australian Museum. Duplicates (one pair in each case) of any species collected, which represents a significant extension of geographic range must be offered to the Western Australian Museum.
9. All specimens and material retained under the authority of this licence must be offered to the Western Australian Museum for loan, for inclusion in its collection, or on request be made available to other persons involved in relevant scientific studies.
10. The licence holder must create, compile and maintain records and information as required in a DBCA approved "Return of Fauna Taken" of all fauna taking activities as they occur.
11. A DBCA approved "Return of Fauna Taken" must be completed in full (including nil taking details) and submitted to DBCA Wildlife Licensing Section (wildlifelicensing@dbca.wa.gov.au) prior to the end of each annual period of the licence (from the valid from date) (refer to "Additional Information" section below).

D Stefoni
LICENSING OFFICER
WILDLIFE PROTECTION BRANCH

Delegate of CEO

ADDITIONAL INFORMATION

1. It is an offence to take any species of fauna listed as a threatened species under Section 19 of the *Biodiversity Conservation Act 2016* unless the person is authorised under Section 40. The penalty ranges between $300 000 and $500 000; Section 150 Biodiversity Conservation Act 2016.
2. Regulation 82 empowers the CEO to add, substitute or delete a term or condition of a licence or to correct errors. Such power may be exercised on application of a licence holder or by the CEO's own initiative. If an amendment to a licence term or condition is required, please contact the CEO or the Licensing Section on wildlifelicensing@dbca.wa.gov.au in the first instance. The licence holder, if adversely affected by a condition imposed in this licence, may apply to the State Administrative Tribunal for review of the decision of the CEO to impose that condition on a licence: regulation 89(2) Biodiversity Conservation Regulations 2018.
3. A person must not contravene a condition of a licence. The penalty for an offence involving the contravention of a condition of a licence is a fine of $10 000: regulation 84 of the Biodiversity Conservation Regulations 2018.
4. It is an offence for persons authorised by this licence to enter land that is not in their possession or under their control without first having the *prior* written authorisation of the current owner or occupier of the land to:

   a) enter the land; and

b) carry out the activity authorised by this licence.

The penalty for this offence is a fine of $5 000: regulation 101(2) of the Biodiversity Conservation Regulations 2018.

5. The licence holder must be able to produce for inspection upon request any information or records required by regulation 85(2) of the Biodiversity Conservation Regulations 2018 Penalty $10 000. It is an offence to knowingly include false or misleading information or make statements in records: regulation 85(3) of the Biodiversity Conservation Regulations 2018 Penalty $10 000. It is an offence to include any information or make any statement in a return that the licence holder knows to be false or misleading in a material particular: regulation 86 (2) of the Biodiversity Conservation Regulations 2018 Penalty $10 000.
6. The approved DBCA "Return of Fauna Taken" data file can be downloaded from the DBCA webpage (https://www.dpaw.wa.gov.au/plants-and-animals/licences-and-authorities).
7. The issuing of a licence under the Biodiversity Conservation Regulations 2018 does not constitute an animal ethics approval or a licence to use animals for scientific purposes as required under the *Animal Welfare Act 2002,* Animal Welfare (Scientific Purposes) Regulations 2003. It is the responsibility of a licence applicant / licence holder to ensure that they comply with the requirements of all applicable legislation. Enquiries relating to the Animal Welfare Act licences and animal ethics approvals are to be directed to the Department of Primary Industries and Regional Development (https://www.agric.wa.gov.au/animalwelfare).
8. Threatened fauna can only be taken under a *Biodiversity Conservation Act 2016* Section 40 authorisation, Occurrences of threatened species must be reported to the CEO. For more information please see https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals.
9. Any interaction involving Nationally Listed Threatened Fauna that may be invasive and/or harmful to the fauna may require approval from the Commonwealth Department of the Environment and Energy http://www.environment.gov.au/about-us/business-us/permits-assessments-licences. Interaction with such species is controlled by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and Environment Protection and Biodiversity Conservation Regulations 2000 as well as the *Biodiversity Conservation Act 2016* and Biodiversity Conservation Regulations 2018.

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

REGULATION 4 LAWFUL AUTHORITY

[A LAWFUL AUTHORITY APPLICABLE TO REGULATIONS 4 and 35A OF THE CONSERVATION AND LAND MANAGEMENT REGULATIONS 2002]

Pursuant to the provisions of regulation 4(1) of the Conservation and Land Management Regulations 2002 (the Regulations) this notice (the Authority) gives "lawful authority" to the person named thereon (the authority holder) to undertake or perform the activity described under "Purpose" (below), that would otherwise be unlawful under the regulations cited in this authority.

AUTHORITY HOLDER DETAILS

Name: Ford (Surname) Victoria (Other Names)

Address: Level 4, 46 Colin Street, West Perth 6005

Phone: 9328 1900

Affiliation: Biota Environmental Sciences Pty Ltd

Email: victoria@biota.net.au

Purpose: Fauna monitoring using camera traps.

Application:

The following areas of CALM Land shall be "approved CALM land" for the purposes of this Authority, between the dates specified: -

Location:
De Haer Reserve – Jandakot Regional Park
Sandy Lake – Jandakot Regional Park
Spectacles – Beeliar Regional Park

Between: **22/11/23** and **22/12/23** or sooner if revoked.

Details of "Nominated Vehicle/s":

To be confirmed prior to entry.

Conditions applying to the "lawful authority" granted under this notice:

1. This Authority, together with the accompanying attached conditions, is a written notice for the purposes of Regulation 4(1) of the Conservation and Land Management Regulations 2002 (the Regulations) and it authorises the person named as the authority holder to carry out certain acts on CALM Land as described under "purpose" (above) that would otherwise be unlawful under the Regulation cited in this authority.

2. This Authority does not comprise lawful authority to enter CALM Land the subject of Division 1 of Part 3 of the Regulations unless the land and/or waters described below ("CALM Land") is defined in Regulation 2 to mean land, or land and waters to which the Regulations apply, including caves and parts of caves on, or under that land. The Regulations apply to the land and waters descried in Regulation 3 of the Regulations.

3. Vehicles entering CALM lands must be in must be in good running condition; free of fuel, oil and hydraulic leaks.

4. Strict dieback hygiene procedures must be adhered to. Vehicles are to be free of soil and vegetative material prior to entry.

5. All vehicles are to keep to established tracks.

6. Gates to be closed and locked after entry and exit.

7. All equipment is to be clean on entry.

8. Works to be restricted to times of dry soil conditions where possible.

9. All work areas are to be left free of work materials, equipment and litter.

10. Licensee to confirm the locations of study sites and provide results of the fauna survey to the relevant officer once the project is complete.

11. Licensee is not permitted to take fauna.

12. The clearing of native vegetation is not permitted.

13. The licensee is to notify Zacc Phillips on 0418 913 074 at least 72 hours prior to works commencing on site.

DATE OF ISSUE 22/11/23

Tim Fisher
Manager, Regional Parks Unit
Swan Region

Please note
This authority is not transferable to any other person and is not valid for any other purpose other than the purpose(s) stated

GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

AUTHORISATION TO TAKE OR DISTURB THREATENED SPECIES

Section 40 of the Biodiversity Conservation Act 2016

AUTHORISATION DETAILS

Authorisation number: TFA 2324-0152

Authorisation duration: From date signed by Minister's delegate below until 30 November 2024.

AUTHORISATION HOLDER

Victoria Ford

Biota Environmental Sciences

Level 4, 46 Colin Street

West Perth WA 6005

AREA TO WHICH THIS AUTHORISATION APPLIES

Anketell Road and Thomas Road from Tonkin Highway to Rockingham Road (DBCA Swan Coastal District).

AUTHORISED ACTIVITY

Purpose of taking/disturbance:

Terrestrial fauna survey to determine the presence of conservation significant species recorded in the survey area. Findings will inform project planning and environmental impact assessment processes.

Threatened species authorised to be taken/disturbed (including conservation status):

A short-tongued bee, *Leioproctus douglasiellus* (Critically Endangered)

A short-tongued bee, *Neopasiphae simplicior* (Critically Endangered)

Chuditch, *Dasyurus geoffroii* (Vulnerable)

Douglas's broad-headed bee, *Hesperocolletes douglasi* (Critically Endangered)

Quantity of threatened species authorised to be taken/disturbed:

Up to three (3) individuals per species (of the above listed threatened bee species) per site, separated by at least ten (10) km, may be captured and retained as voucher specimens.

Any number of individual animals of the above listed threatened fauna species may be captured and released during the trapping program and/or disturbed by the survey activities.

Authorised taking/disturbance methodology:

Take threatened bee species through sweep netting. Sweep netting will be undertaken for up to four (4) hours each day across four (4) survey events. Sweep netting will be undertaken during known bee flight times using an entomological net.

Captured bees may be retained for formal identification. Specimens will be lodged with the Western Australia Museum.

Disturb chuditch through the deployment of camera traps lured with consumable bait.

All proposed activities will be conducted in accordance with EPA Technical Guidance – Sampling of Short Range Endemic Invertebrates and DBCA Standard Operating Procedures (SOPs) for fauna survey and monitoring techniques.

Dates within which taking/disturbance authorised:

From date signed by Minister's Delegate below until 30 November 2024.

AUTHORISED PERSONS

Victoria Ford

Michael Greenham

Kit Prendergast

Sylvie Schmidt

Additional personnel who are suitably qualified and experienced in the Authorised Activities working under the direction of the Authorisation Holder.

Field assistants working under the direct supervision of the Authorisation Holder or suitably qualified and experienced named Authorised Persons.

CONDITIONS

1. The written authorisation of the person in possession or occupation of the land accessed and upon which threatened fauna is taken or disturbed must:
    a. state location details (including lot or location number, street/road, suburb and local government authority);
    b. state land owner or occupier name, and contact phone number;
    c. specify the time period that the authorisation is valid for;
    d. be signed and dated; and
    e. be attached to this Authorisation to take or disturb threatened species at all times.
2. This Authorisation to take or disturb threatened species, and any other written authorisation or lawful authority which authorises the take or disturbance of fauna on specified locations for the Authorised Activities must be carried at all times while conducting Authorised Activities and be produced on demand by a wildlife officer.
3. Authorised Persons who are not suitably qualified and experienced in the Authorised Activities, and field assistants assisting with the Authorised Activities, must be working under direct supervision of experienced and competent named Authorised Persons.

4. Any inadvertently captured species of non-target threatened fauna or non-threatened fauna (threatened fauna as defined in *Biodiversity Conservation Act 2016* Section 19) is to be released immediately at the point of capture. Details of such fauna must be included in the fauna taking/disturbance return as required under this Authorisation.

5. The Authorisation Holder, unless specified in the Authorised Activities, must not:

    a. release any threatened fauna in any area where it does not naturally occur;

    b. transfer threatened fauna to any other person or authority (other than the Western Australian Museum) unless the fauna is injured or abandoned fauna (condition 6); or

    c. dispose of the remains of threatened fauna in any manner likely to confuse the natural or present-day distribution of the species.

6. All threatened fauna injuries, unexpected deaths, unplanned euthanasia, and abandoned young or eggs, must be reported by the Authorisation Holder to the DBCA Wildlife Protection Branch, Wildlife Licensing Section (wildlifelicensing@dbca.wa.gov.au) to notify of the incident and for advice on treatment or disposal. All deceased threatened fauna must be offered to the Western Australian Museum.

7. All holotypes and syntypes and a half share of paratypes of species or subspecies permitted to be permanently taken under this Authorisation must be donated to the Western Australian Museum. Duplicates (one pair in each case) of any species collected, which represents a significant extension of geographic range must be offered to the Western Australian Museum.

8. To prevent any unnecessary collecting in this State, all specimens and material taken and retained under this Authorisation, that remain at the conclusion of the activities, must be offered to the Western Australian Museum for loan, for inclusion in its collection, or made available to other persons involved in relevant scientific studies if so required.

9. The Authorisation Holder must create, compile and maintain records and information as required in a DBCA approved "Return of Fauna Taken/Disturbed" of all fauna taking/disturbance activities as they occur.

10. A DBCA approved "Return of Fauna Taken/Disturbed" must be completed in full (including nil taking/disturbance details) and submitted to DBCA Wildlife Licensing Section (wildlifelicensing@dbca.wa.gov.au) prior to the end of the Authorisation duration and, if the Authorisation duration is greater than 12 months, prior to the end of each annual period of the Authorisation (from the date signed by the Minister's delegate) (refer to "Additional Information" section below). Where a licence to take or disturb fauna is issued in conjunction with this Authorisation to take or disturb threatened species, a combined "Return of Fauna Taken/Disturbed" may be completed and submitted.

11. A written report detailing the undertaken Authorised Activities, outcome, unintended incidents, injuries and mortalities of threatened fauna, implemented monitoring, mitigation and management, and explaining the records and information as required in a DBCA approved "Return of Fauna Taken/Disturbed" must be submitted, in addition to a "Return of Fauna Taken/Disturbed" to DBCA Wildlife Licensing Section (wildlifelicensing@dbca.wa.gov.au).

ADDITIONAL INFORMATION

1. Before undertaking the Authorised Activity, permission must be obtained from: (a) the owner or occupier of private land; or (b) the department or authority controlling Crown land, on which the threatened fauna occurs. This includes obtaining the written endorsement from Department of Biodiversity, Conservation and Attractions (DBCA) if the Authorised Activity is proposed for land managed by DBCA.
2. This Authorisation to take or disturb threatened species does not constitute lawful authority issued under regulations 4 and 8 of the *Conservation and Land Management Regulations 2002*. Contact the applicable Department District Officer for further information.
3. The approved DBCA "Return of Fauna Taken/Disturbed" template can be obtained from DBCA Wildlife Licensing Section (wildlifelicensing@dbca.wa.gov.au).
4. Any interference or influence involving nationally listed threatened fauna that may be harmful to the fauna and/or invasive may require approval from the Commonwealth Department of Climate Change, Energy, the Environment and Water (https://www.dcceew.gov.au/environment/biodiversity/threatened/permits). Interference or influence with such species is controlled by the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and *Environment Protection and Biodiversity Conservation Regulations 2000*.
5. It is the responsibility of the Authorisation Holder to ensure that they comply with the requirements of all applicable legislation.
6. An Authorisation to take or disturb threatened species does not constitute an animal ethics approval or a licence to use animals for scientific purposes as required under the *Animal Welfare Act 2002* and *Animal Welfare (Scientific Purposes) Regulations 2003*. Enquiries relating to the Animal Welfare Act scientific purposes licence and animal ethics committee approvals are to be directed to the Western Australian Department of Primary Industries and Regional Development (https://www.agric.wa.gov.au/animalwelfare).

Margaret Byrne

Dr Margaret Byrne
Executive Director of Biodiversity and Conservation Science
AS DELEGATE OF THE MINISTER
DATE: ....24/....4...../2023

Department of
Primary Industries and Regional Development

GOVERNMENT OF WESTERN AUSTRALIA

Mr Roy Teale
Director / Zoologist
Biota Environmental Sciences

Dear Mr Teale

WILDLIFE ANIMAL ETHICS COMMITTEE – ASSESSMENT DECISION

New Project Application #: NPA155
Project Title: South Coast Region terrestrial vertebrate fauna surveys.
Project Chief Investigator: Roy Teale

Thank you for your application to use animals for scientific purposes which was reviewed and assessed by the Wildlife Animal Ethics Committee (WAEC) on 9 March 2023. The WAEC has **Approved** this application from **9 March 2023 to 28 February 2026** and work on this project using animals for scientific purposes may commence from the date above.

The project's **WAEC Permit number** is: **WAEC 23-04-28.**

The **Level of Impact** is determined as: **Minor conscious intervention.**

The approval of this project requires you to adhere to the conditions outlined in this letter and to comply with the *Animal Welfare Act* (2002) and the *Australian code for the care and use of animals for scientific purposes* (8th edition, 2013).

Responsibilities of Chief Investigators:

Investigators and teachers have personal responsibility for all matters related to the welfare of the animals they use and must act in accordance with all requirements of the Australian code of practice for the care and use of animals for scientific purposes. This responsibility begins when an animal is allocated to the project and ends with its fate and the completion of the project.

Chief Investigators are required to:

1. Provide the WAEC Executive Officer with a copy of any current licences and permits required for the project e.g., from Department of Biodiversity, Conservation and Attractions (DBCA).
2. Ensure all personnel associated with the project are competent to perform the tasks assigned to them.
3. Provide prompt notification to the WAEC Executive Officer (wildlifeaec@dpird.wa.gov.au) immediately (within 24 hours) should any unforeseen or adverse event occur. In the event of the death of an animal, the cause needs to be determined as quickly as possible and a post-mortem examination by a qualified person undertaken where possible. In remote areas, any animals that die as a result of the project's activities should be refrigerated and retained until a post-mortem can be undertaken. The use of photographs to record injuries, moribund animals and the adverse event scene are encouraged.
4. Accommodate and facilitate requests from the WAEC to monitor the care and use of animals by inspecting animals, animal housing and the conduct of procedures, and / or reviewing records, photography and reports.

5. Ensure accurate records of the care and use of animals are maintained.
6. Provide information on your Annual Animal Use in the preceding year to the Scientific Licencing Unit when requested (usually in January – March).
7. Where personnel from other Institutions are involved in the project, or when premises of another Institution are being utilised, that Institution must be advised of the project and must provide approval or formally delegate approval of the proposal.

Permits:

- Permits are valid for the dates shown above providing a satisfactory Annual Animal Use Report is submitted and approved by February of each year.
- Permits and application documents are treated in confidence. Information contained within your permit and application documents will only be provided to the Scientific Licensing Unit and other appropriate personnel as required. Any other requests for information will be referred to the Chief Investigator and their institution.
- Permits may be closed by a Chief Investigator with the submission of a Closed Permit form, or by a WAEC directive.
- Up to three major amendments to the project may be sought during this period.
- Investigators may be added to a permit following the submission of a signed amendment form. This will not be counted as one of the three amendments allowed per application.
- All forms are available on the DPIRD WAEC website or from the Executive Officer at: wildlifeaec@dpird.wa.gov.au.
- Please quote your ethics permit number in all correspondence.

Licences and Authorities:

1. It is a requirement that your institution's licence to use animals for scientific purposes (Scientific Use Licence, SUL) obtained from the WA Department of Primary Industries and Regional Development (DPIRD) is available for public scrutiny. Therefore, you must ensure that a copy (an electronic copy is adequate) of the licence is:
   - Displayed wherever animals are used for scientific purposes, e.g., in your laboratory, or
   - Carried by Investigators when undertaking field work, e.g., in the car or boat.

2. An approved animal ethics project and Permit does not constitute an Authorisation to take or disturb threatened species, or a Fauna Licence under the *Biodiversity Conservation Act* (2016) and Regulations (2018).

I wish you every success with your project.

Yours sincerely

Keith Morris
Chair, Wildlife Animal Ethics Committee
10 March 2023