Busselton Health Campus
Western Ringtail Possum Monitoring
Annual Report
2018

Prepared for
WA Country Health Service

astron

Report Reference: 21249-18-BISR-1RevA_181122

This page has been left blank intentionally.

Busselton Health Campus
Western Ringtail Possum Monitoring
Annual Report 2018

Prepared for
WA Country Health Service

Job Number: 21249-18

Reference: 21249-18-BISR-1RevA_181122

Revision Status

Rev	Date	Description	Author(s)	Reviewer
A	22/11/2018	Draft Issued for Client Review	J. Trainer	S. Pearse

Approval

Rev	Date	Issued to	Authorised by	
			Name	**Signature**
A	22/11/2018	S. Ritchie	S. Pearse	

astron

Abbreviations

Abbreviation	Definition
BHC	Busselton Health Campus
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
WACHS	WA Country Health Service
WC Act	*Wildlife Conservation Act 1950*

Executive Summary

Astron Environmental Services conducted the 2018 western ringtail possum monitoring survey to satisfy the relevant environmental conditions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* approval (EPBC 2011/6011) for the Busselton Health Campus redevelopment. The survey was undertaken from 29 to 30 October 2018. Over two consecutive nights, 61 and 67 western ringtail possums were recorded, respectively. This equates to an average count of 64 individuals for the 2018 monitoring period.

The remains of 12 western ringtail possums were located around a red fox den site on the eastern side of the Busselton Health Campus.

The recording of 64 western ringtail possums during the 2018 monitoring survey is above the 20% population reduction trigger value (54 individuals). However, the number of western ringtail possums has reduced considerably from the most recent post breeding surveys completed in October 2015 and 2016. The ongoing predation pressure from the resident red fox is likely to be a contributing factor to the decline.

Table of Contents

List of Figures

List of Tables

1 Introduction

Astron Environmental Services (Astron) was engaged by the WA Country Health Service (WACHS) to conduct an annual monitoring program for western ringtail possums (*Pseudocheirus occidentalis*) within the grounds of the Busselton Health Campus (BHC), located approximately 2.5 km to the west of the Busselton town centre. The annual monitoring is to be undertaken in the years 2018, 2019, 2020 and 2025 consistent to the methods and details specified in the Western Ringtail Possum Management Plan (Coffey Environments Australia Pty Ltd 2013) specific to the BHC site. The western ringtail possum monitoring program is a regulatory requirement under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) approval conditions (EPBC 2011/6011) (Table 1).

The BHC has undergone a redevelopment project that included the removal of western ringtail possum habitat; peppermint trees (*Agonis flexuosa*) and the translocation of 20 western ringtail possum individuals. The western ringtail possum monitoring program has been conducted on biannual basis from 2009 – 2016 and annually in 2017 and 2018. Under the Western Ringtail Possum Management Plan (Coffey Environments Australia Pty Ltd 2013) a reduction of more than 20% of the baseline population (threshold value of 54 individuals or less) would trigger a management response.

The objective of the 2018 monitoring program is to obtain a western ringtail possum abundance count for the BHC and compare the survey results with the baseline data and previous year's survey data.

Table 1: Relevant regulatory conditions under the EPBC approval (EPBC2011/6011).

Regulatory document	Condition no.	Requirement	Evidence
Development of the Busselton Health Campus (EPBC 2011/6011).	Condition 9 (c).	Details of a western ringtail possum monitoring program for the project area.	This report.

2 Background Information

2.1 Ecology

The western ringtail possum is a folivorous (leaf eating herbivore) marsupial endemic to south-western Australia. The current distribution of this species is restricted to patchy occurrence along the south coast (from east of Albany to west of Walpole), the west coast (from Bunbury to Augusta), and inland populations in Harvey, Perup and Manjimup. The peppermint woodland around the Busselton area is classified as habitat critical to survival of this species (Department of Parks and Wildlife 2017).

The diet of the western ringtail possum almost exclusively comprises the dominant or co-dominant upper and midstorey myrtaceous plants. In urban areas the western ringtail possum may also feed on introduced garden species (Department of Parks and Wildlife 2017).

In some coastal populations, western ringtail possums breed year round with breeding peaks in late autumn and winter and a lull in late summer (Van Dyck and Strahan 2008). During the day western ringtail possums shelter in dreys (nests made of vegetated matter), tree platforms, tree hollows, hollow logs, *Xanthorrhoea* spp. skirts, under sedges, forest debris and disused rabbit warrens.

2.2 Conservation Status and Threats

The western ringtail possum is classified as Vulnerable under the Commonwealth EPBC Act and has recently been upgraded to Critically Endangered under the *WA Wildlife Conservation Act 1950* (WC Act).

Since colonial settlement the western ringtail possum has undergone a substantial range contraction, up to 90% of the predicted original range. The Ludlow-Busselton area has long been known as the last substantial stronghold for western ringtail possums left on the Swan Coastal Plain. This Swan Coastal Plain population has been contracting since the early 1990s, mostly due to habitat loss and fragmentation from urban development and mining (Woinarski, Burbidge, and Harrison 2014). The effect of the south-west's drying climate on the peppermint stands and canopy in this area is also considered a contributing factor of the decline (Jones and Francesconi 2007). Most of the populations within the Busselton area that have had sufficient monitoring to detect a decline over the last 5 to 12 years have shown declines of 20 to 80% (Woinarski, Burbidge, and Harrison 2014). From existing survey data, the population in the Bunbury to Dunsborough region is possibly between 2,000 and 5,000 animals (Department of Parks and Wildlife 2017). The major threats to this species survival include:

- habitat loss and fragmentation
- introduced predators (red foxes and cats)
- climate change
- timber harvesting
- altered fire regimes.

3 Methods

3.1 Monitoring

The 2018 monitoring program was conducted by Senior Zoologist John Trainer from 29 to 30 October 2018. The methods used are consistent with those previously used for the BHC site (Coffey Environments Australia Pty Ltd 2013), and John Trainer was previously involved in conducting the western ringtail possum monitoring survey in 2015. Although the Western Ringtail Possum Management Plan (Coffey Environments Australia Pty Ltd 2013) stated that the post breeding monitoring was to be conducted in November/December, the 2018 survey was conducted in October to be consistent with the previous survey timing. The weather conditions during both survey nights were moderately windy; however western ringtail possum activity did not appear to be impacted.

Nocturnal spotlighting was conducted between 1930 and 2130 hours on both nights consisting of transects approximately 50 metres apart around the areas of BHC with intact vegetation (survey effort shown in Figure 1). Western ringtail possums have distinctive eye shine that is easily detectable using this technique (Department of Parks and Wildlife 2017).

A drey census was conducted during the daylight hours of 30 October through areas containing intact vegetation. Dreys were one of the following four categories based on Thompson and Thompson (2009):

- Category 1 - Flat bed of vegetative material.
- Category 2 - Slightly concave nest of vegetative material.
- Category 3 - Dome shape nest with an open top.
- Category 4 - Completely conical nest that is fully-enclosed.

All western ringtail possum and drey locations were marked using a handheld GPS.

3.2 Limitations

No limitations to the survey scope were encountered.

4 Results and Discussion

A total of 61 western ringtail possum individuals were recorded on the night of the 29 October 2018 and 67 individuals on the night of the 30 October 2018. This equates to an average count of 64 individuals for the 2018 monitoring period. As the 2018 survey was undertaken during the post breeding period the records were from lone adults or an adult accompanied by a sub-adult or juvenile (Plate 1; Plate 2.) The density of western ringtail possums within BHC is approximately 19.1 individuals per ha of canopy, based on an estimated remaining canopy area of 3.35 ha (Coffey Environments Australia Pty Ltd 2013). A summary of the western ringtail possum monitoring results from 2009 to 2018 is displayed in Table 2.

Plate 1: Adult and juvenile western ringtail possum.

Plate 2: Adult and sub-adult western ringtail possum.

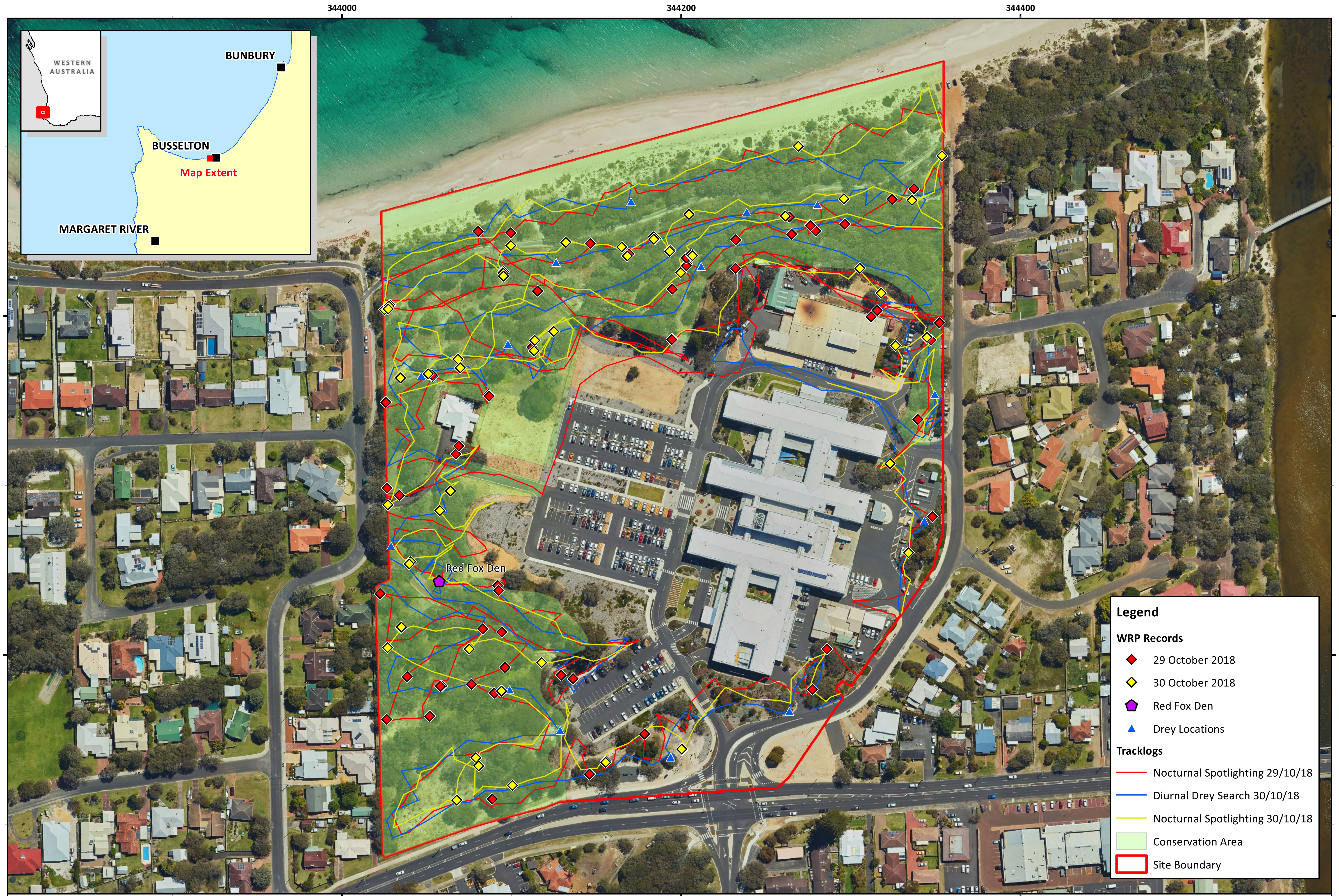
Table 2: Western ringtail possum abundance and density.

Survey Timing	Abundance	Density (Individuals/hectare of canopy)
February 2009	58	13.1
November 2009	61	13.8
February 2010	44	10.0
December 2010	77	17.4
March 2011	57	12.9
November 2011	77	17.4
March 2012	82	18.6
October 2012	68	20.3
March 2013	61	18.1
October 2013	70	20.9
March 2014	64	19.1
October 2014	68	20.3
March 2015	68	20.3
October 2015	108	32.2
March 2016	79	23.6

Survey Timing	Abundance	Density (Individuals/hectare of canopy)
October 2016	104	31.0
March 2017	78	23.3
October 2018	64	19.1

A total of 14 dreys were recorded across the BHC, these constitute one drey classified as category 1, three dreys classified as category 2, five dreys classified as category 3 and five dreys classified as category 4. No western ringtail possums were identified as inhabiting the dreys at the time of the survey. The location of the western ringtail possums and the dreys recorded are displayed in Figure 1.

In addition, the remains of 12 western ringtail possum were located around a red fox (*Vulpes vulpes*) den site on the eastern side of the BHC (Figure 1). The conservation area has been heavily impacted by rabbit (*Oryctolagus cuniculus*) grazing, with a large resident population occurring across the BHC. Although not in direct competition with the western ringtail possum for food or shelter the continued presence of rabbits at the BHC will impact the long term health of the vegetation, in addition to providing a food source for red foxes.



WA Country Health Service

Busselton Health Campus Western Ringtail Possum Monitoring, Annual Report 2018

Figure 1: Western Ringtail Possum and Drey Locations

Author: J. Trainer | Drawn: L. Robinson | Date: 22-11-2018 | Figure Ref: 21249-18-ENVDR-1RevA_181115_WRP_Drey_Loc

The long term data for the western ringtail possum abundance at the BHC follows a trend of higher numbers in October/November following the seasonal breeding over winter, followed by a decrease in February/March coinciding with sub-adult dispersal and mortalities (Figure 2).

The recording of 64 western ringtail possums during the 2018 monitoring survey is above the 20% population reduction trigger value (54 individuals) and is comparable to the average abundance recorded during the baseline surveys (65 individuals). However, the western ringtail possum number has dropped considerably (41% and 39% reduction, respectively) from the October surveys conducted in 2015 and 2016, which were the most recent post breeding surveys completed (Figure 2). The ongoing predation pressure from the resident red fox is likely to be a contributing factor to the decline.

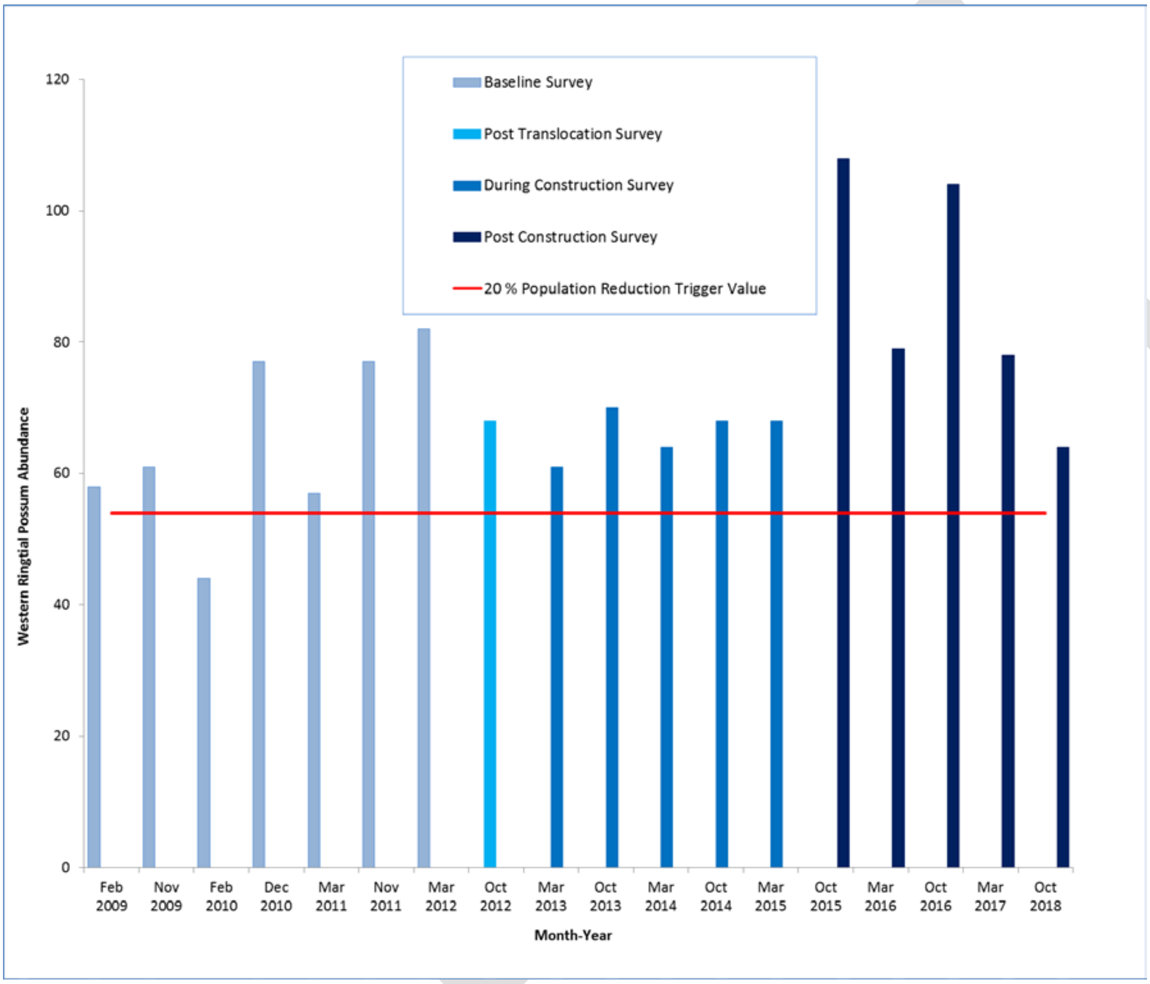


Figure 2: Western ringtail possum abundance at BHC from 2009 to 2018.

5 Conclusions

As the western ringtail possum population remains above the 20% trigger value a management response involving an increase in monitoring frequency, further population investigation or consultation with the Department of Environment and Regulation and the Department of the Environment and Energy (formerly Department of the Environment) is not required at this stage (Coffey Environments Australia Pty Ltd 2013).

6 References

Coffey Environments Australia Pty Ltd 2013, *Western Ringtail Possum Management Plan - Busselton Hospital Health Campus Redevelopment*, Unpublished report for Department of Health, Perth.

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

Jones, BA & Francesconi, M 2007, *An important local population of the Western Ringtail Possum, Pseudocheirus occidentalis: a 2006 survey study of the population and habitat in the Busselton localities of Siesta Park and Kealy*, unpublished report prepared for Geocatch.

Thompson, SA & Thompson, GG 2009, 'A case for *in situ* management of Western Ringtail Possums, *Pseudocheirus occidentalis*, in development areas', *Journal of the Royal Society of Western Australia*, vol. 92, no. 3, pp. 269-76.

Van Dyck, S & Strahan, R 2008, *The Mammals of Australia*, 3 edn., New Holland Publishers, Sydney.

Woinarski, JCZ, Burbidge, AA & Harrison, PL 2014, *The Action Plan for Australian Mammals 2012*, CSIRO Publishing, Collingwood.

This page has been left blank intentionally.