Management Plan for the Western Ringtail Possum

(*Pseudocheirus occidentalis*),

Main Road, WA Project King River to Kalgan River, South Coast Highway, 7.16 to 18.12 SLK.

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1. Project description

Main Roads is proposing to conduct widening and reconstruction of South Coast Highway, between SLK 7.16 to 18.12 (the project area). A biological assessment of vegetation, flora and fauna values was undertaken to inform the environmental impact and approval process. The Survey Area included the full width of the road reserve that comprised 44.13 hectares (ha). The Survey Area extended from approximately the King River to the Kalgan River with a large proportion adjacent to Bakers Junction Nature Reserve.

The Western Ringtail Possum (*Pseudocheirus occidentalis*) was one threatened species identified in the Survey as occupying a number of habitats within the vicinity of the clearing area.

The Western Ringtail Possum is listed as fauna that is rare or likely to become extinct (Specially Protected) under the *Wildlife Conservation Act 1950* and has undergone a recent upgrading of its threatened status by the WA government from Endangered (EN) to Critically Endangered (CR), based principally on its known large and rapid declines in the Busselton and Manjumup Region populations.

2. Summary of Western Ringtail Possum distribution, status and biology and ecology, with particular emphasis on the South Coast population

2.1 Distribution

Western Ringtail Possum populations are currently known from several highly disjunctive locations, both coastal and inland, in the south west of WA, within an area much contracted from the pre-European range, extending from Harvey in the north, to Mt Manypeaks, near Cheynes Beach in the south.

The South Coast population occurs from West Cape Howe in the west to Mt Manypeaks in the east. Recent records (Bronte Van Helden unpub. data) have extended its known inland range in the east to Lake Pleasant View Nature Reserve. An outlying population in the Porongurup National Park to the north was present prior to an extensive fire in the park in 2007. It is unknown if this population still persists.

2.2 Status of populations across the Western Ringtail Possum range

The status of Western Ringtail Possum populations across its range varies from stable to declining or unknown. The factors contributing to this decline are complex and interactive, their significance varying between localities and scales (Wayne *et al.* 2005d, Richardson 2005). This highlights the importance of identifying population specific issues relating to the species throughout its range.

The South Coast population (including the project area) is a stronghold for the species. However, information about this population's status is lacking In close proximity to Albany, the species occurs in both secure reserves and in significant numbers in urban areas. Anecdotal evidence suggests that the urban and peri-urban population is either stable or possibly declining, due to historical removal or planned removal of occupied habitat through residential development.

Comprehensive Information is yet to be obtained on the South Coast population, including extent of the population, abundance and density within different habitats types,

core areas where breeding occurs and important corridors for maintaining population connectivity.

Recent work (Gilfillan 2015, Oyster Harbour Catchment Group un. Publ. data and Van Helden 2017) has added to knowledge of the Western Ringtail Possum within three Albany townsite reserves, and indicates that animals within these reserves occur in high densities and likely constitute a core population.

2.3 Biology and ecology

Description

The Western Ringtail Possum (*Pseudocheirus occidentalis*) is an arboreal, nocturnal, folivorous marsupial endemic to the southwest of WA. It is about 30-35 cm from head to rump and is distinguished by its long slender prehensile tail with a white tip, which it uses to curl around branches, helping it move through the bush, and to carry twigs and leaves to build its drey (nest).

Breeding

Females can breed at less than 12 months of age and can breed continuously. Breeding is continuous in some populations, but generally there is a peak between May to June and occasionally in October to November in inland populations (Wayne 2005c). Females usually breed only once per year, but sometimes two and litter size is usually one, but they can produce two or three (Jones *et al.*, 1994).

Home ranges and densities

The Western Ringtail Possum is a largely solitary and territorial animal, with little overlap of home ranges between individuals, except for those of mother and daughter (Jones *et al.*1994, Jones 1995, Wayne *et al.* 2005c). Home range sizes, and hence densities, vary largely across its range, due primarily to the nutritional content of its food, although canopy cover may also play a part.

Home ranges of 8 individuals recently radio-tracked within Jarrah/Marri woodland communities on three reserves within the Albany townsite (Mt. Clarence, Mt. Adelaide and Mt. Melville) (range from 0.5 – 1.37 ha (mean = 0.88)) are similar to those at the lower value of the range throughout its area of distribution (0.7-16.5 ha), and are comparable to those found in the Busselton region population which occurs in habitats

dominated by *Agonis flexuosa*. The Albany reserves home ranges are much smaller than those found in inland populations, which also occur in Jarrah/Marri dominated vegetation types (Van Helden 2017). Van Helden speculates that this may be due to higher nutritional content of south coast Jarrah and Marri trees compared with the same species occurring inland.

Refuge sites of Western Ringtail Possum include dreys (self-built nests), platforms, tree hollows, vegetation, fallen hollow logs, grasstree (*Xanthorrhoea* spp.) skirts, on the ground under thick sedge clumps. In general, dreys are common refuge sites in coastal Peppermint woodlands and thickets whereas tree hollows are the preferred rest site in the inland populations that occur within Eucalypt woodlands. In the animals studies by Van Helden on the Albany Mounts the Western Ringtail Possum was found to occupy dreys (n = 44) significantly more often than the other refuge types, but were also found in hollows (n = 18) and ground nest sites (n = 17). On average possums utilised 3 ± 0.47 (n = 9) daytime refuge sites and the number of refuge sites did not differ between males and females

Habitat associations and density estimates

The preferred habitat for the Western Ringtail Possum in the south coast population is not well understood, but the species has recorded in a wide variety of habitats, including; coastal heath, Jarrah/Marri woodland and forest, Jarrah/Sheoak woodland, peppermint woodlands, myrtaceous heaths and shrublands, Bullich (*Eucalyptus megacarpa*) dominated riparian zones and Karri forest (*Eucalyptus diversifolia*), granite communities (*Gastrolobium bilobum/Hakea elliptica*), sedgelands (comprising 26 vegetation units identified and mapped in the Albany Region (35km radius from Albany) (Sandiford and Barrett 2010).

Recent (2016 and 2017) spotlight surveys have found high densities of Western Ringtail Possum in *Coastal Hills Forest, Jarrah Woodland* and *Marri/Jarrah Forest/Peppermint Woodland* vegetation units (up to 3.19 and 3.24 per ha respectively – based on highest number observed over 4 nights) on Mt. Clarence/Adelaide and Mt. Melville Reserves within the Albany town site (Oyster Harbour Catchment Group Project, unpubl. data).

During spotlighting, Western Ringtail Possum were observed most frequently in Jarrah *(Eucalyptus marginata)* trees, followed by Marri *(Corymbia callophylla)* trees. Observations in Peppermint (*Agonis flexuosa*) were the third most frequent. These values

were not compared to their availability of these tree species within the vegetation communities, however, taking into account the frequency of observations relative to the abundance of major tree species within their home range Van Helden *et. al* (2017) also found Jarrah and Marri to be the preferred tree species for Western Ringtail Possum (151 night-time observations of five individuals, *P. occidentalis* were frequently found to be utilising *E. marginata* and *C. calophylla* (88%).

The high use of Marri and Jarrah suggests a preference for these species as foraging trees within habitat in which these species dominate. This is consistent with other studies. Jones *et al*., 1994) found the diet of Western Ringtail Possum to consist almost exclusively of myrtaceous plants: Peppermint, Marri and Jarrah. However, the wide variety of vegetation associations that Western Ringtail Possum occur in on the South Coast suggests that the diet may be much broader in this population.

3. Survey Results with respect to Western Ringtail Possums

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The biological survey report for the project area (Rathbone and Gilfillan 2017) provides a biological assessment of vegetation, flora and fauna values to inform the environmental impact and approval process.

The desktop survey carried out by Rathbone indicated that the Western Ringtail Possum was likely to occur within the survey area. The field assessment confirmed its predicted occurrence. The Western Ringtail Possum was found to utilise a wide range of vegetation types in various levels of condition. Several scat accumulations and dreys were found from road reserves adjacent to Bakers Junction Nature Reserve and extending east towards the Kalgan River.

Habitats varied from Jarrah, Marri and Sheoak woodlands, *Banksia* Shrublands and *Taxandria parviceps* Thickets (within wetland vegetation units) that varied in condition from excellent to degraded (understory absent, single roadside row of Marri). An occupied hollow was also observed in a roadside Jarrah (potential Western Ringtail Possum). Subsequently, all remnant native vegetation (including Marri with hollows) adjacent to Bakers Junction Nature Reserve and in the road reserves extending east to the Kalgan River are refuge, foraging and breeding habitat for Western Ringtail Possum (Rathbone and Gilfillan 2017).

Road reserves in the eastern section of the Survey Area are also a potentially important ecological linkage for Bakers Junction Nature Reserve and the Kalgan River, which is used extensively by Western Ringtail Possum. Many roadside thickets within the wetlands (adjacent to Baker Junction Nature Reserve) may also be used by Western Ringtail Possum as linkages between upland Eucalypt Woodlands (Rathbone and Gilfillan 2017).

Western Ringtail Possum habitat trees within the footprint have been mapped by Rathbone and Gilfillan (2017) (Map 4A and B).

4. Management Plan Objective

The objective of this Management Plan to minimise the impact on Western Ringtail Possum habitat and individuals in the project area and immediate vicinity, through providing practical actions to be carried out at each phase of the project.

Fauna specialist

A fauna specialist is a suitably qualified and experienced in the capture and handling of the fauna likely to be encountered. The role of the fauna specialist is to ensure that fauna in the impact area is identified and appropriate measures are employed so that injury or mortality is prevented.

A Regulation 15 licence to take fauna for public purposes (fauna relocation) is required from DPaW for anyone being a fauna specialist during a clearing operation. This is usually issued on a per project basis- obtained by the Fauna Specialist or the proponent (Main Roads Western Australia).

Standard Operating Procedures

DPaWs Standard Operating Procedures (SOPs), that have been reviewed by the animal ethics committee, apply to the methods of capture and handling of fauna by the fauna specialist/spotter.

The particular SOPs that apply in this instance are:

- SOP 7.2 Observing animals from secondary signs,
- SOP 9.6 Hand capture of wildlife,
- SOP10.1 Animal handling/restraint using soft containment,
- SOP 10.2 Hand restraint of wildlife,
- SOP 11.1 Transport and temporary holding of wildlife,
- SOP 14.1 Care of evicted pouch young,
- SOP 14.2 First aid for animals.

5. Management Plan Actions

Proposed management actions for project phases (pre-clearing, clearing, construction, post-construction are outlined in Table 1.

Table 1: Management Actions for the Western Ringtail Possum during all construction phases of Main Roads WA

Construction Phase	Management actions		Responsibility	Comments/rationale
Pre-clearing	**Habitat tree flagging**	Demarcation (flagging tape) of all significant trees for Western Ringtail Possum identified by Rathbone and Gilfillan (2017) within 30 m of the proposed clearing footprint.	Main Roads	
	Fauna inspection	• Inspect dreys and potential hollows for signs of current occupation. This will be determined in the main by the presence of fresh scats at the base of trees or in branch forks. Fresh scats should also be searched for in thick understorey (eg. sedges, thickets of *Taxandria*).This should be carried out no more than 2-3 hours prior to clearing. • Hollows in ground logs should be inspected directly. • Check trees for dreys constructed since the pre-clearing surveys	Fauna Specialist	
	Habitat	Avoid clearing trees with dreys or hollows **if at all possible**. If not possible then mark and observe these during clearing and remove any injured animals (see in Clearing below)	Main Roads and Fauna Specialist	Trapping Western Ringtail Possum is very difficult and relocation **is not recommended.** If possum

Construction Phase	Management actions		Responsibility	Comments/rationale
				has time to vacate the area being cleared before they befall any injury they will be unlikely to suffer any major trauma. They are largely territorial and are therefore able to move to another part of their territory without encountering competition by another individual.
Clearing	**General**	At all times clear cautiously and from the road towards surrounding vegetation and in one area at a time so that Western Ringtail Possum and all fauna has time to move to undisturbed bush before being injured.	Main Roads Project Manager	
	Western Ringtail Possum Habitat Tree felling	Carefully fell Western Ringtail Possum Habitat under the supervision of the Fauna Specialist. Mechanically shake or agitate trees with dreys or hollows prior to felling to encourage any animals present to either leave the tree or show themselves. Felling should involve gently pushing the tree and lowering or felling to avoid sudden and rapid falling as this is likely to	Main Roads Project Manager	**The primary aim is to let the animal move away of its own accord.** Avoidance of handling is recommended, unless the animal is injured. Possums are susceptible to stress-factors such as close

Construction Phase	Management actions		Responsibility	Comments/rationale
		injure Western Ringtail Possum. Subsequent to felling, systematically check hollows in habitat trees from the ground for any remaining possums. Hollow bearing limbs and woody debris should be kept on site in adjacent vegetation, at least overnight, preferably permanently, to provide disturbed Western Ringtail Possum temporary shelter sites, and further opportunity to escape.		proximity to noise and handling.
	Discovered Fauna	A **halt to machinery** should be called if a Western Ringtail Possum is seen. Sufficient time (up to 1 hour) should be given to allow the possum to move away of its own accord. If the possum does not move then encourage movement by walking closer to the animal. If the possum remains then attempt capture by hand or with a net. If the possums cannot be captured because the tree hollow is too large, high or its recovery would breach OH&S	Fauna Specialist	When disturbed, Western Ringtail Possums tend to move a short distance and remain stationary.

Construction Phase	Management actions		Responsibility	Comments/rationale
		requirements then the tree should be felled (in the direction of other tree debris if possible) and animals recovered post-felling , After capture, if uninjured, relocate the possum into adjacent vegetation up to a distance of 20-30m.		
	Injured Fauna	Any injured possums should kept in warm, dark, quiet and secure place and taken to a Wildlife Care or Vet as soon as practicable.	Fauna Specialist	
		Wildlife carer or vet should be notified of the dates of clearing and be available to receive any injured animals	Main Roads Environment Officer to notify	
Construction		Ensure construction vehicles do not disturb any more bush than has already been cleared in the footprint, including ground vegetation. Construction workers should report any Western Ringtail Possum seen during construction to the appropriate supervisor. Any dead possums should also be recorded and carcass collected; DPaW Albany office contacted	Main Roads Environment Officer	

Construction Phase	Management actions		Responsibility	Comments/rationale
		All Western Ringtail Possum sightings should be passed on to the Department of Parks and Wildlife.		
Post-construction		Any revegetation that occurs should include plant species suitable for Western Ringtail Possum feeding and refuge sites (see list of species Appendix 1). The following monitoring is suggested: Monitor for Western Ringtail Possum roadkills along the footprint once per week for a period of 6 week. If the number of roadkills is excessive (more than 2 per week) then **consider** the addition of fencing or rope bridge, especially in areas where the road reserve serves as an important linkage.	Main Roads WA	

6. References

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Appendix 1: List of suitable endemic plant species that will provide ecological benefit to Western Ringtail Possum within the vegetation types present in the clearing footprint.

Plant Species	Ecological Role
Corymbia calophylla	Food and refuge (hollows)
Eucalyptus marginata	Food and refuge (hollows)
Eucalyptus staeri	Food and refuge (hollows)
Eucalyptus marginata x staeri	Food and refuge (hollows)
Agonis flexuosa	Food and refuge (dreys)
Taxandria parviceps	As thickets (refuge)
Sedges (large thick clump forming) **Eg. *Anarthria scabra***	Refuge