ATTACHMENT K

Transport and Main Roads

Species Management Program

Special Least Concern and Colonial Breeding Species

Mackay/Whitsunday District

Project Title – Eton Range Realignment Project (ERRP)

Project No. – 242/33B/008

Permit Location – Eton Range (33B)

Connecting Queensland
www.tmr.qld.gov.au

Queensland Government

Contact for enquiries and proposed changes

If you have any questions regarding this document or if you have a suggestion for improvements, please contact:

Contact officer: Shannon Ireland

Title: Environmental Officer

Phone: 07 4951 8576

Version history

Version no.	Date	Changed by	Nature of amendment
0.1	13.01.15	Shannon Ireland	Prepare SMP
1	26.03.15	Shannon Ireland	Issue SMP for Approval
2	25.07.15	Shannon Ireland	Amended SMP for Approval
3	04.08.15	Tim Dalton	Inclusion of DEHP Comments

The following officer has **reviewed** this document:

Department of Transport and Main Roads

Name Timothy Dalton

Position Environmental Officer

Signature Date 04.08.2015

Department of Environment and Heritage Protection

Name Rebecca Williams

Position Director Wildlife Management Unit

Signature Date

1 Introduction

The Peak Downs Highway crosses the Eton Range approximately 40 km south-west of Mackay. The range section through Spencers Gap has tight curves and a very steep grade, rising 130 m in a little less than 1.5 km. There are additional climbing lanes at the top and bottom of the range, but only two lanes through the central section, approximately half the length of the crossing.

Figure 1 Peak Downs Highway – Eton Range Crossing

Approximately 4,000 vehicles use the range crossing each day, including 100 B-double trucks travelling to and from the mines. The Peak Downs Highway is the only designated B-double route west from Mackay to the mines in the Northern Bowen Basin. The freight carried per day includes 1.7 million litres of diesel and 80 tonnes of other dangerous goods, including explosives.

The existing Eton Range crossing represents a significant constraint to the safe and efficient operation of the Peak Downs Highway between Mackay and Nebo. The uphill travel is a challenge for heavy vehicles where the grade reduces speeds to less than 20km/h and causes traction issues. The geometry has also contributed to driver fatalities and serious accidents. Incidents which result in road closure are also reasonably common, thereby affecting the reliability of the link.

Upgrade of the Eton Range crossing involves realignment and construction of two (2) dual lane carriageways, split carriageway, for approximately 1.7 km and the widening of the existing carriage to 4 lanes with 3 metre shoulders for approximately 1.2 km. The project is part of the Peak Downs Highway Safety Package, funded by the Federal Government to support development in local townships, enhance productivity of existing and future mining operations in the Bowen Basin and Galilee Basin by addressing the effect of limitation in the region's freight transport network, and improve the safety and efficiency of the Peak Downs Highway.

The upgrade will improve safety on the descent by eliminating the straight approach to the steep down grade; reduce the likelihood and severity of traffic accidents and incidents by providing flatter grades, larger radius curves and additional lanes; eliminate dangerous overtaking of slow-moving vehicles by eliminating bunching of traffic behind heavy vehicles, and; improving travel time reliability by reducing disruption and closure resulting from traffic incidents. The design of the project is unique – the objective is to manage driver behaviour rather than simply meet engineering design compliance.

Figure 2 Eton Range Realignment Project (ERRP)

Figure 3 Eton Range Realignment Project (ERRP)

A number of studies have been undertaken as part of the concept and design phases of the upgrade, including flora and fauna assessments in 2009, 2011 and 2013.

In December 2013, a Fauna Assessment Report was prepared by Ecological Survey and Management. The objective of the fauna and habitat assessment was to identify key fauna constraints within the area impacted by the final route selection.

This Species Management Program specifically relates to Special Least Concern and Colonial Breeding species which are expected to utilise habitat present within the project area for breeding.

Under the *Nature Conservation (Wildlife) Regulation 2006*, Special Least Concern species are:

- *Phascolarctos cinereus* (Koala);
- *Tachyglossus aculeatus* (Echidna);
- *Ornithorhynchus anatinua* (Platypus); and
- a least concern bird to which any of the following apply –
  - the agreement called 'Agreement Between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment' and signed at Tokyo on 6 February 1974(JAMBA);

- the agreement called ‘Agreement Between the Government of Australia and the Government of the People’s Republic of China for the Protection of Migratory Birds and their Environment’ and signed at Canberra on 20 October 1986 (CAMBA); and
- the convention called ‘Convention on the Conservation of Migratory Species of Wild Animals’ and signed at Bonn on 23 June 1979.Bonn Convention (Bonn Convention).

Colonial breeding species are a group of animals of the same kind co-existing in close association for breeding purposes.

Areas that are used by a protected animal to incubate or rear an animal’s offspring are protected under the *Nature Conservation Act 1992*. This Species Management Program aims to meet the requirements of Section 332 of the *Nature Conservation (Wildlife Management) Regulation 2006* and the current ‘Species management program for tampering with animal breeding places’ (May 2013).

It is noted that this Species Management Program is not applicable to Koalas. Correspondence from DEHP dated 2 July has confirmed that potential koala habitat is not considered an animal breeding place for the purposes of a Species Management Program under Section 332.

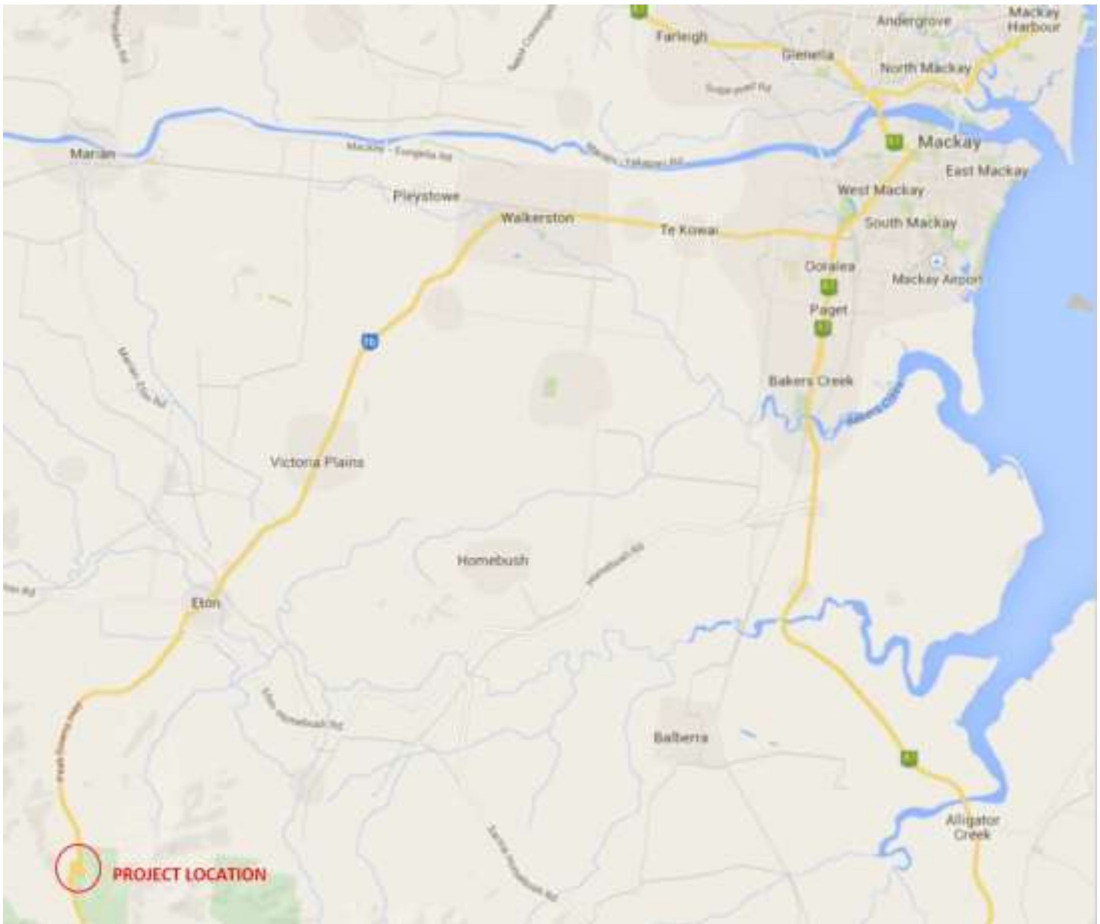

Figure 4 Project Locality Map

2 Applicant Details ('Approved Entity')

ABN and Registered Entity Name

ABN 39 407 690 291

Department of Transport and Main Roads

Registered Address

Mackay Whitsunday District

Mackay Office

Floor 2, 44 Nelson Street

Mackay Queensland 4740

Contact Details

Name	Shannon Ireland
Title	Environmental Officer
Telephone	+61 7 4951 8576
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Postal Address	PO Box 62 Mackay QLD 4740

3 Organisational Summary

The Department of Transport and Main Roads (DTMR) formed in April 2009, when Queensland Transport and the Department of Main Roads merged. DTMR plan, manage and deliver Queensland's integrated transport environment to achieve sustainable transport solutions for road, rail, air and sea. DTMR moves and connects people, places, goods and services safely, efficiently and effectively across the state, contributing to people's quality of life, Queensland's economic well-being, and a sustainable environment.

DTMR's vision, as stated within the Transport and Main Roads Strategic Plan 2013-2017, is "Connecting Queensland – delivering transport for prosperity". The goal of the Department is to create an "integrated, safe, efficient and reliable transport system for Queensland".

Located within the Central Queensland Region, the DTMR Mackay/Whitsunday Region stretches from Bowen in the north to St Lawrence in the south, and from the coast inland to Moranbah, Clermont and the Bowen Basin Coalfields. The Mackay office manages over 2000 k of the state-controlled road network, encompassing the local government areas of Isaac Regional Council, Mackay Regional Council and Whitsunday Regional Council. With tourism, sugar, cattle and coal mining being several of the major industries in the region, the road network plays an important role in connection Queensland.

The Infrastructure Management and Delivery Division of DTMR is responsible for the delivery, maintenance and management of Queensland's transport infrastructure. By integrating technology and regional delivery functions, the Division ensures seamless delivery and efficient decision-making in providing improved transport infrastructure outcomes for Queensland communities.

4 Activity Details

The project involves the construction of two (2) split dual lane carriageways for approximately 1.7km and the widening of the existing carriage to 4 lanes with 3 metre shoulders for approximately 1.2km.

The project will contain all the normal elements of a road construction project including relocation of services, drainage, earthworks, placement of pavement, road lighting, road furnishing etc.

The construction sequence will generally entail the following activities –

- Progressive clearing of vegetation and ground preparation works along the alignment as required to accommodate construction activities;
- Installation of temporary erosion and sediment controls in accordance with Erosion and Sediment Control Plan developed by the Contractor and approved by DTMR as Principal;
- Installation of drainage infrastructure including 15 new drainage culverts ranging in size from 1/600RCP to 3/2100RCP with a Ø1800 corrugated steel pipe grouted centrally;
- General bulk earthworks which include approximately 400,000m^3 of road excavation and 80,000 m^2 of road embankment;
- Installation of complex longitudinal drainage systems in the centre median ranging in size from 1/450 RCP to 1/1500RCP, approximately 1 km long, with numerous branch pits and grated inlet pits;
- Excavation and concrete lining of an elaborate surface catch and batter drainage system to intercept and direct overland flow to controlled outlet points, over 3200 m^3 of reinforced concrete;
- Rehabilitation of approximately 950 m of existing roadway;
- Placement of 30,000m^3 of plant mixed pavement material and 15,000 tonnes of DG14 & DG20 asphalt;
- Spraying over 220,000 litres of bituminous primes, primerseals and seals;
- Installation of an elaborate barrier system which includes w-beam, thrie-beam and concrete barriers and other road furniture including road signs; and
- 6.4 hectares of landscaping and revegetation works, with approximately 4.0 hectares of 1:1 slope to stabilise and vegetate.

For construction of reinforced earth embankments, construction specifics include –

- Establishment of access track around hairpin;
- Progressive clearing. On the embankments, trees will be felled and stumps left in-situ to provide stabilisation of the upper slopes to allow construction to occur;
- Special earthworks with approximately 33,500 m^3 of bench excavation to the existing steep side slope to key in the placement of 188,000 m^2 of purposely processed embankment material. Embankments will be constructed from the bottom up;
- Based on geotechnical investigations, some blasting is likely to be required. This will occur in accordance with legislative requirements;
- Sorting, processing and blending materials to satisfy the material specifications within standard and RE embankments;
- Permanent drainage controls;
- Geogrid will be installed within the embankment in 600 mm increments;
- Landscaping will utilise ameliorated soil and Enkamat, overlayed with organic blanket. Enkamat is a permanent erosion prevention mat, and is used as an alternative to concrete, asphalt and stone riprap systems for controlling erosion; and
- Species selection for landscaping is based on sight lines and speed of establishment. A range of growth forms have been selected, dependant on the location.

Ancillary activities that will be required during construction will include –

- Establishment of site office (or offices);
- Clearing and stripping of access tracks;
- Establishment of stockpile and spoil areas;
- Establishment of laydown areas for construction materials;
- Crushing and screening of material sourced on site;
- Sourcing suitable construction materials; and
- Sourcing water for construction activities.

Post Construction –

- Landscaping and revegetation area maintenance and weed maintenance;
- Road maintenance, including drainage and pavement; and
- Construction site decommissioning.

The main construction project is expected to take two years to complete.

Clearing will occur in stages. Vegetation has been previously disturbed for lay down areas, emergency stopping places for heavy vehicles, Telstra and Ergon infrastructure, survey works, geotechnical investigations, and trial embankment works. A plan showing the impact area is included as Attachment A. Approximately 17 ha of vegetation will be removed as part of the construction contract. The majority of clearing is expected to be completed in early 2016, however final timing of works will be dependent on the Contractor.

5 Terms

Approval for this SMP is in effect until December 2017, and thereafter expires. This timeframe will allow sufficient time for staged clearing works to be completed.

The SMP is granted subject to the Approved Entity complying with the conditions and management actions stated herein.

If tampering with an animal breeding place occurs in contravention of any conditions of the SMP, such taking or tampering is not approved.

This SMP does not prevent any reasonable action being taken by DTMR to safeguard public and staff safety in case of an emergency situation. In accordance with Section 332 of the Nature Conservation (Wildlife Management) Regulation 2006, DEHP agrees that in an emergency situation, public and staff safety considerations will take precedence. Where possible, DTMR will discuss actions that DTMR proposes to take, with DEHP, by contacting Jeanette Kirby on 4999 6810. DTMR will also notify in writing (via email) of actions taken under this clause, within 48 hours.

Approved Parties

The approved party is the Approved Entity, which is the Department of Transport and Main Roads (DTMR), and suitably qualified persons engaged or subcontracted by DTMR to act on their behalf.

Spotter-catcher activities will be undertaken by individuals approved under a DEHP S12(D) *Nature Conservation (Administration) Regulation 2006* Rehabilitation Permit to trap/relocate protected native fauna and to pick for identification purposes native flora and to undertake fauna surveys.

The Contractor awarded the works will responsible for engagement of a suitably qualified spotter-catcher. DTMR will advise DEHP of details prior to commencement of works.

6 Species Information

A Fauna Assessment Report was prepared for the Department of Transport and Main Roads in December 2013 by Ecological Survey and Management (EcoSM). In addition to a review of database and mapping sources, a number of survey techniques were used in order to target the range of significant fauna species that potentially occur in the project area. The fauna survey resulted in records of 73 species, including three amphibians, 53 birds, nine mammals and eight reptiles.

It is noted that four species listed as ‘threatened’ under the *Nature Conservation (Wildlife) Regulation 2006* were assessed as having a moderate likelihood of occurring with the project area - *Macroderma gigas* (Ghost bat), *Erythrotriorchis radiates* (Red goshawk), *Geophaps scripta scripta* (Squatter pigeon), and *Tyto novaehollandiae kimberli* (Masked Owl). The fauna assessment by EcoSM concluded that the project area is unlikely to support breeding habitat for these species due to lack of specific habitat features such as caves and watercourses.

Areas that are used by a protected animal to incubate or rear an animal’s offspring are protected under the *Nature Conservation Act 1992*. Table 1 below summarises those Special Least Concern and Colonial Breeding species identified by the Wildlife Online database (updated 10 March 2015) and/or during field surveys, that could potentially be utilising existing habitat features within the project extents for breeding. Species profiles are included as Attachment B.

It is noted that DEHP confirmed in correspondence dated 4 June 2015 that *Pardalotus straitus* (Striated Pardalote) are not colonial breeders, and therefore management of this species is as per DTMR Generic Species Management Program.

Table 1 – Species likely to be using habitat features for breeding

Common Name	Scientific Name	Conservation Status under NCA
Colonial Breeding Species		
Avian		
Tree Martin	*Petrochelidon nigricans*	LC
Mammals		
Beccari's Free-tailed Bat	*Mormopterus beccarii*	LC
Chocolate Wattled Bat	*Chalinolobus morio*	LC
Eastern Forest Bat	*Vespadelus pumilus*	LC
Eastern Free-tailed Bat	*Mormopterus ridei*	LC
Gould's Wattled Bat	*Chalinolobus gouldii*	LC
Greater Broad-nosed Bat	*Scoteanax rueppellii*	LC
Hoary Wattled Bat	*Chalinolobus nigrogriseus*	LC
Little Broad-nosed Bat/Northern Broad-nosed Bat	*Scotorepens greyii/S.sanborni*	LC

Northern Free-tailed Bat	*Chaerephon jobensis*	LC
Sugar Glider	*Petaurus breviceps*	LC
Tube-nosed Bat	*Murina florium*	LC
Squirrel Glider	Petaurus norfolcensis	LC
Yellow-bellied Sheath-tailed Bat	*Saccolaimus flaviventris*	LC
Special Least Concern		
Avian	-	-
Black-faced Monarch	*Monarcha melanopis*	LC (Migratory & Marine (EPBC))
Spectacled Monarch	*Monarcha trivirgatus*	LC (Migratory & Marine (EPBC))
Cicadabird	*Coracina tenuirostris*	LC
Rufous Fantail	*Rhipidura rififrons*	LC (Migratory & Marine (EPBC))
Mammals	-	-
Short-beaked echidna	*Tachyglossus aculeatus*	LC

7 Site Assessment

A total of four Regional Ecosystems were identified during detailed field surveys. All of the vegetation communities that were identified within the survey area align with remnant REs that have a VM Act Vegetation Management status of 'Least Concern' and Biodiversity status of 'No concern at present'. RE 8.12.5 is endemic to the sub-region (Clark-Connors Range province) while the other three REs occur ubiquitously upon ranges, hills and/or footslopes throughout the Central Queensland Coast bioregion.

Table 2 – Summary of Vegetation Communities

Regional Ecosystem	Vegetation Community Description
8.12.3	Evergreen to semi-evergreen, notophyll to microphyll, vine forest to vine thicket, of foothills and uplands on Mesozoic to Proterozoic igneous rocks
8.12.5	Eucalyptus portuensis and/or Lophostemon confertus and/or E. exserta and/or Corymbia trachyphloia and/or E. fibrosa open forest on Mesozoic to Proterozoic igneous rocks
8.12.12	Eucalyptus tereticornis and/or Corymbia spp. and/or E. platyphylla and/or Lophostemon suaveolens woodland to open forest on hill slopes on Mesozoic to Proterozoic igneous rocks
8.12.7 (incl. 8.12.7c)	Corymbia citriodora +/- Eucalyptus portuensis +/- E. drepanophylla (or E. crebra) open forest on hill slopes and undulating plateaus, on Mesozoic to Proterozoic igneous rocks

There were a high number of potential habitat trees present within the survey area. A total of 88 were recorded, mainly Pink Bloodwood (*Corymbia intermedia*). These are described in Attachment C. It is noted that the area surveyed (86 ha) is significantly larger than the area that will actually be cleared by the project. The dominant habitat feature were hollows. Although no nests were observed during the 2013 survey by EcoSM, eight trees did contain termitoriums.

The project is not expected to have any significant long term impact on fauna utilising the area, due to the presence of similar habitat throughout the Eton Range and wider Clarke-Connors Ranges, however vegetation clearing and earthworks does have the potential to impact on individuals, potential breeding habitat, and breeding places.

Most fauna species exhibit a high degree of adaptability to noise and vibration emissions associated with construction. Construction noise may cause some behavioural modifications by birds, potentially altering feeding activities, and sudden loud noises may startle bird and mammal species. Consequently, there may be some species that will be repulsed by noise and therefore will forgo utilisation of habitat within the noise disturbance zones. This zone will likely be different for individual species and depend on the intensity and nature of the noise sources. It is expected that the majority of species will be not adversely effected by the issue, and repulsion of fauna is not expected to occur over a significant distance from the noise source.

8 Mitigation Management

It is recognised that felling trees can result in the death of, or serious injury to fauna that are present in those trees or in trees adjacent to those being cleared. Whilst there are a number of possible management measures that can be implemented on a construction site, due consideration must be given to what is practical given site constraints, and reasonable with regards to potential impacts.

A number of management measures have been developed to mitigate potential impacts on fauna during clearing works. It is recognised that potential impacts to the breeding places, eggs and young will be dependent on timing of clearing and the breeding cycle of individual species.

Prior to commencement of construction, a project specific Environmental Management Plan (Construction) (EMP(C)) will be developed by the Contractor for all works. The EMP will contain management strategies for environmental issues including erosion and sediment control, water quality, flora management, weed management, fauna management, air quality, noise and vibration management. The EMP(C) will reference this approved Species Management Program and any relevant conditions.

As part of the site induction process, all staff who will be involved in clearing works will be made aware of the management measures to be implemented on site, and their responsibilities under the *Nature Conservation (Wildlife Management) Regulation 2006*. Failure to comply will result in the Contractor being responsible for any and all mitigation costs associated with the non-conformance.

At least one fauna spotter catcher will be on site for all clearing and grubbing work. At all time, fauna spotter catchers will remain visible to, and clear of, operators and machinery. Communication will be achieved through the use of 2 way radios.

- Habitat features including nests, burrows and hollow bearing trees will be flagged prior to clearing, by a fauna spotter-catcher.
- For easily accessed areas, pre-clearance survey to be undertaken at least one week prior by fauna spotter-catcher;
- Where possible, and with consideration of breeding season and timing of clearing works, inactive breeding places should be relocated/sealed to prevent use;
- Where an active avian breeding place is found and unable to be avoided, eggs/young are to be removed by the fauna spotter-catcher and taken to a vet for assessment. On the advice of the vet, eggs may be destroyed and young may be euthanised. Where considered appropriate by the vet, and if acceptable to the wildlife carer, some eggs/young may be handed over into care.
- Fauna spotter-catcher to also search hollows using cherry-pickers, cameras on poles or tree climbing equipment and note the location of any fauna. Where appropriate, fauna are to be relocated and breeding feature sealed to prevent re-entry. Where it is not possible to relocate fauna, fauna will be taken to a vet for assessment, and where deemed appropriate by the vet, in consultation with the wildlife carer, will be handed over to care.
- If active breeding places are in close proximity to project boundary and buffer zones can be retained, where possible breeding cycle should be allowed to complete.
- Sequential clearing shall be in a direction away from disturbed/cleared areas, and towards vegetation to be retained to ensure fauna is not pressured to cross through construction areas or the Peak Downs Highway. Where possible, clearing will start from an existing cleared site and will not disconnect patches of habitat.
- Fauna spotter-catcher to recommend management of any potential or active breeding places within area of vegetation to be retained between split carriageways, with consideration of species, construction schedule and disconnect from other areas of habitat.
- Hollows and other habitat features that have not been inspected or relocated are to be checked by a fauna spotter-catcher immediately prior to clearing, and fauna captured and relocated, or taken to a specialist wildlife carer where necessary.

- Where breeding places cannot be inspected, or fauna cannot be captured, the tree will be nudged/shaken by the excavator (or similar equipment) under supervision of fauna spotter-catcher.
- Fauna exclusion fencing will be installed upon the advice of the fauna spotter-catcher. All other fencing within work site must be fauna friendly to allow for unimpeded movement away from the construction zone.
- No destruction of habitat outside the designated project extents. Boundaries of clearing stages are to be clearing defined on-ground and no-go zones clearly signposted and fenced to prevent unauthorised clearing or access.
- Waste will be managed on site to discourage fauna from approaching the construction site in search of food.
- Due to the extent of intact, remnant vegetation surrounding the project area, installation of nest boxes is not considered necessary. Felled hollows shall be relocated outside the disturbance area.

<u>Table 3 – Species Specific Mitigation Measures during Construction</u>

Species	Management Action
Microchiropteran Bats • Beccari's Free-tailed Bat • Chocolate Wattled Bat • Eastern Forest Bat • Eastern Free-tailed Bat • Gould's Wattled Bat • Greater Broad-nosed Bat • Hoary Wattled Bat • Little Broad-nosed Bat/Northern Broad-nosed Bat • Northern Free-tailed Bat • Tube-nosed Bat • Yellow-bellied Sheath-tailed Bat	• Fauna spotter-catcher must be vaccinated against lyssavirus. • Outside of breeding season, individuals can be removed by fauna spotter-catcher and stored in calico bags until they can be released at dusk. • If a maternity site is identified in close proximity to project boundary, where possible, breeding cycle should be allowed to complete. Fauna spotter-catcher to utilise flagging tape and/or barricading to designate buffer zone to remain in place until roost has vacated the hollow. • If clearing the roost is unavoidable, utilise soft-felling technique for relocation of the roost feature. This involves felling of the tree in sections and carefully lowering limbs to the ground. Cuts should be made at least 50 cm from the roost feature. The felled limb with the roost feature should be relocated into adjacent habitat at a similar height. • Should any bats be encountered during felling operations, all works and activities must cease immediately and the bats should be caught and stored in calico bags until dusk, or otherwise given to wildlife carer. • Inactive breeding places should be relocated where feasible into adjacent habitat and place at similar height.
Echidna	• Where possible, avoid tampering with nursery burrows by allowing breeding cycle to complete. This will only be practical where active breeding places are located in close proximity to project boundary and buffer zone can be retained. • Juveniles leave the nursery burrow at around 8 months of age (Menkhorst & Knight, 2001) so where an active breeding place is unable to be avoided, young should be removed and given to wildlife carer.
Gliders	• Clearing has potential to restrict movement of this species due to the loss of trees that form part of linear corridors. Fauna spotter-catcher to conduct survey of hollows prior to clearing and relocate individuals to suitable habitat, and transfer to care of wildlife carer.

Where fauna is injured during works, works will cease and the animal will be inspected by the fauna spotter-catcher to assess the extent of injury and determine appropriate treatment. Where injury is considered to be minor (for example, a minor abrasion) and the animal is otherwise alert and active, the animal may be released to reduce stress. If the animal is suffering injuries of a more intermediate nature, it will be immediately transported to:

Name Valley Vet Surgery
Phone 4959 2099
Address 14 Dutton St, Walkerston QLD 4751

In the event that a wildlife carer is required, Australian Wildlife Rescue Services will be contacted:

Name	Yvette Getts Australian Wildlife Rescue Services
Mobile	0447 543 268
Address	PO Box 6687, Mackay QLD 4741

Where fauna is handed over into care, wildlife carers will be appropriately subsidised by DTMR.

Where the Contractor observes conflicts between pest animals and native fauna, DTMR will be notified immediately and will liaise with DEHP and the fauna spotter-catcher regarding management measures.

9 Avoidance

The design of the Eton Range realignment was significantly constrained by the very steep terrain. Investigations during the planning phase indicated that due to the road geometry, there were no opportunities to install adequately sized fauna underpasses.

The extent of clearing will be limited to only what is necessary to facilitate construction, and works have been sited adjacent to the existing Peak Downs Highway to avoid significant impacts to areas on the Eton Range that contain undisturbed remnant vegetation and good quality habitat.

The project will cause a reduction in the availability of breeding sites and feeding opportunities through the disturbance and removal of habitat. Where possible, where active breeding places are identified, the breeding cycle will be allowed to complete.

The existing barrier effect currently created by the Peak Downs Highway will be significantly increased by construction of steep batters and road furniture, and has potential to impact non-volant species. However, given the quality of adjacent habitat areas on the Eton Range and wider Clarke-Connors Range bioregion, this is not expected to impact on the long term survival of this species in the local area.

10 Reporting

At the conclusion of each stage of clearing, the Contractor will provide DTMR with a post-clearing report. At the conclusion of the project, DTMR will supply DEHP with a 'Return of Operations' report detailing all actions undertaken in accordance with the SMP. Fauna spotter-catcher will keep an inventory of any fauna species encountered with details of species, capture and release condition and capture and release location.

Incidents involving wildlife injury or death must be recorded in the DEHP Fauna Incident Register. The completed Fauna Incident Register will be forwarded via email to **palm@ehp.qld.gov.au** within 24 hours of the incident occurring.

11 Contact Details

If the DTMR Project Manager needs to contact DEHP regarding any of the activities detailed in this program, Jeanette Kirby – Senior Ranger will be contacted on 4999 6810 or **jeanette.kirby@ehp.qld.gov.au**. Should DEHP need to contact DTMR in regards to implementation of this program, please contact Environmental Officer Shannon Ireland on 4951 8576 or **shannon.m.ireland@tmr.qld.gov.au**.

12 References

EcoSM (2013) *Eton Range Realignment Project – Fauna Assessment Report.* Prepared for Department of Transport and Main Roads, December 2013

EcoSM (2011) *Eton Range Upgrade Project – Options W1A-W2A and X1A-X2A.* Prepared for Department of Transport and Main Roads, July 2011

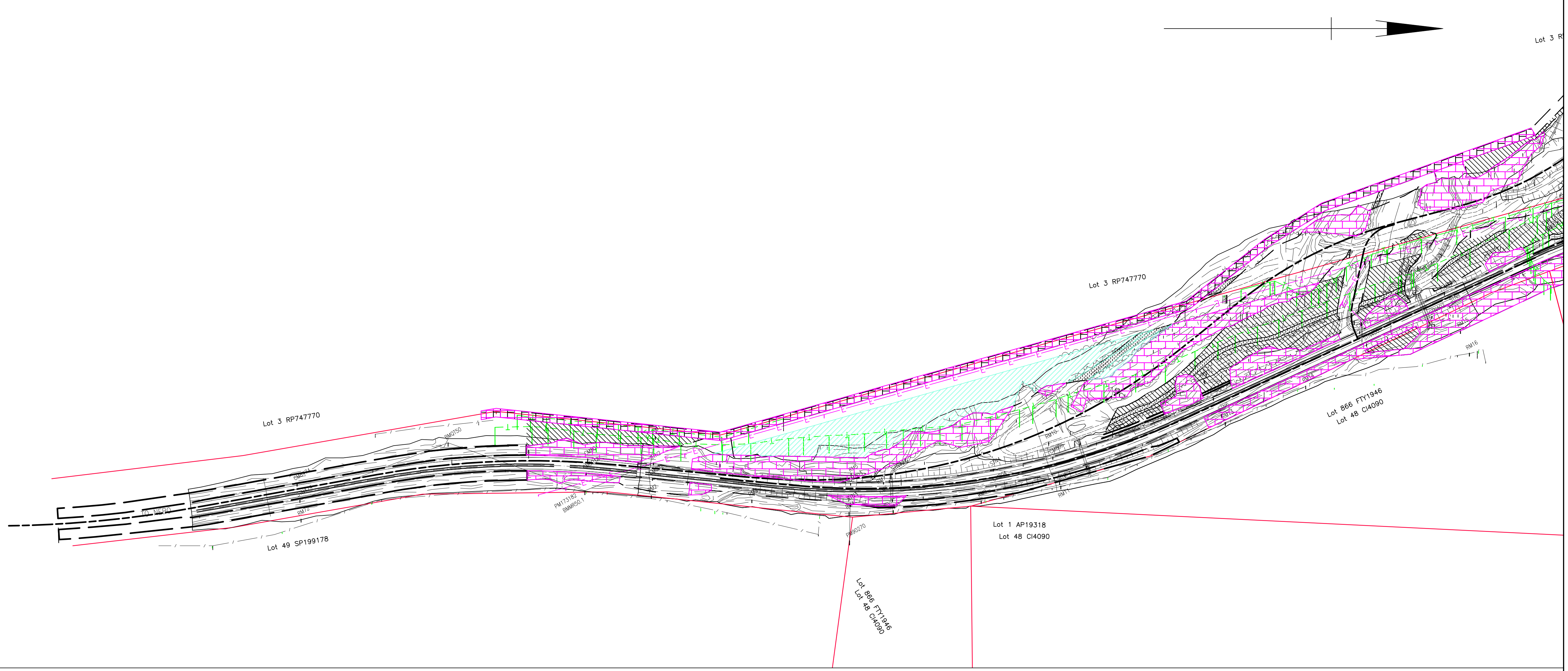
Simpson & Day (1999) *Field Guide to Birds of Australia Sixth Edition*. Penguin Books, Victoria.

Menkhorst & Knight (2001) *A Field Guide to Mammals of Australia*. Oxford, Melbourne.

Churchill, Sue (2008) *Australian Bats Second Edition.* Allen & Unwin, NSW

Birds in Backyards. Online - www.birdsinbackyards.net/finder. Last accessed - 24 March 2015

ATTACHMENT A –PROJECT BOUNDARIES – CLEARING EXTENTS



LEGEND

AREA NOT TO BE CLEARED

POTENTIAL CLEARING (HABITAT ASSESSMENT) (Approx Area = 24654m^2)

ERRP CLEARING WORKS TO BE COMPLETED (Approx Area = 149687m^2)

SPECIAL STAGED CLEARING AND GRUBBING.
FOR SLOPE MANAGEMENT TO BE COMPLETED (Approx Area = 14204m^2)

Queensland Government

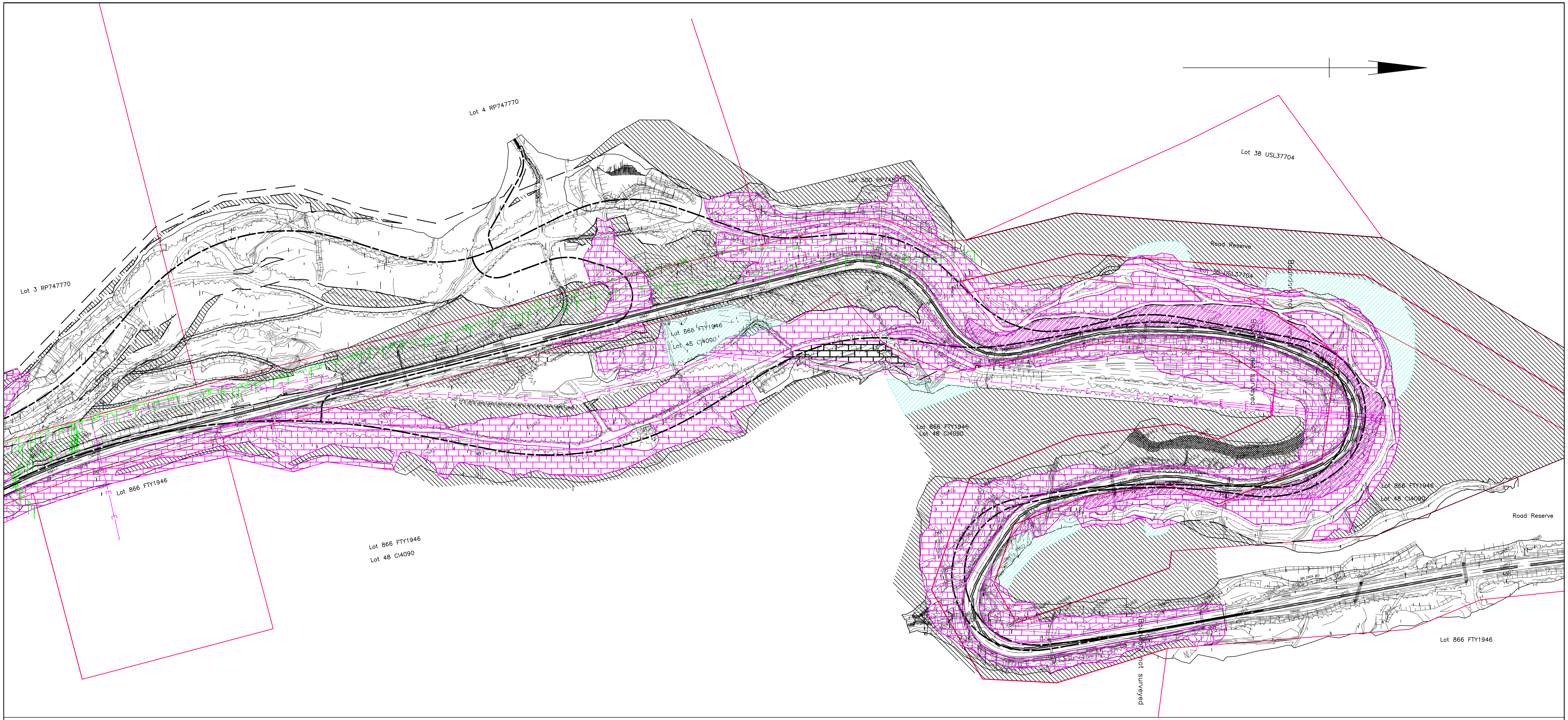
ETON RANGE REALIGNMENT PROJECT

CLEARING TO BE COMPLETED (SHEET 1 OF 2)

Scale 0 20 40 60 80m

ERRP–SK–003

04/08/2015



Queensland Government

ETON RANGE REALIGNMENT PROJECT

CLEARING TO BE COMPLETED (SHEET 2 OF 2)

Scale 0 20 40 60 80m

ERRP-SK-004

04/08/2015

ATTACHMENT B – SPECIES PROFILES

Tree Martin *Petrochelidon nigricans*	
Description	The Tree Martin is a small, swallow-like bird. The adult has a reddish-brown lower forehead, which becomes paler with wear. Its upper forehead, the crown of its head and the back of its neck are a glossy blue-black, though the gloss is lost with wear. It has a black patch in front of its eyes. Its upper back and shoulders are also blue-black. Its rump area is grey, grading towards the rear to brownish grey with reddish grey or buff edges, constituting a contrasting rump-patch. The upper tail is grey-black. Most of the upper wing appears blackish. The bird is paler underneath - sides of breast smoky grey, rest of breast, flanks and thighs dull reddish-brown, buff or cream. These colours grade into almost white towards the birds underside rear. Juvenile birds are similar but paler and brown where adults are glossy blue-black.
Habitat	Tree Martins are found in the air above a range of habitats ranging from open grassed areas to forests, especially near wetlands, but they are also found in urban areas. They are found from the coasts to the arid inlands, from sea-level to over 1500m altitude.
Breeding	Tree Martin's nests can be either isolated or in colonies. In cases where the birds do not migrate, they will often visit the nest-site throughout the year. The nest is mostly in a hole in a tree branch, usually horizontal, which is often up high. Occasionally the nest is in holes or cracks in tree trunks or in cliffs, banks or even buildings. Nests are mostly in eucalypts, though other trees are used. Tree Martins sometimes lay their eggs straight onto the rotten wood in the nesting hollow or onto a bed of leaves, sometimes with dry grass, straw or feathers or other suitable materials. Some may build mud nests. Mud is also sometimes used around the hole at the entrance to a nest to reduce its size. Nesting materials are collected by both birds in a pair. When mud is used it has been observed to be obtained from the water's edge.
Feeding	Tree Martins eat insects, including ants, beetles, bugs, flies and wasps. They hunt by observing from a perch and sallying forth to catch prey on the wing. They do this at canopy height or higher, or low over open countryside. However they do occasionally pick food off the ground and other surfaces.
Status	NCA – Least Concern (Colonial Breeder), EPBC Act – Nil
Observed Location	Not observed – Wildlife Online Search Result
Reference:	www.birdsinbackyards.net

Black-faced Monarch *Monarcha melanopis*	
Description	The Black-faced Monarch has a distinctive black face that does not extend across the eyes, grey upperparts, wings and upper breast, contrasting with a rufous (red-orange) belly. The dark eye has a thin black eye ring and a lighter area of pale grey around it. The blue-grey bill has a hooked tip. Young birds are similar but lack the black face, have a black bill and tend to have a brownish body and wings. The Black-faced Monarch is one of the monarch flycatchers, a forest and woodland-dwelling group of small insect-eating birds, and is strictly arboreal (found in trees).
Habitat	The Black-faced Monarch is found along the coast of eastern Australia, becoming less common further south. The Black-faced Monarch is found in rainforests, eucalypt

	woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating.
Breeding	The Black-faced Monarch builds a deep cup nest of casuarina needles, bark, roots, moss and spider web in the fork of a tree, about 3 m to 6 m above the ground. Only the female builds the nest, but both sexes incubate the eggs and feed the young. Breeding season October to January.
Feeding	The Black-faced Monarch forages for insects among foliage, or catches flying insects on the wing.
Status	NCA – Least Concern (Special Least Concern), EPBC Act – Migratory and Marine
Observed Location	Not observed – High likelihood based on presence of Spectacled Monarch
Reference	www.birdsinbackyards.net -

Spectacled Monarch *Monarcha trivirgatus*	
Description	The Spectacled Monarch is blue-grey above, with a black face mask that extends across both eyes in a 'clover-leaf' pattern, rufous (red-orange) breast, white underparts and a black tail with white outer tips. Immature birds lack the black face and have a grey throat. The north Queensland subspecies *albiventris* has a rufous upper breast sharply defined from more extensive white underparts.
Habitat	The Spectacled Monarch is found in coastal north-eastern and eastern Australia, including coastal islands, from Cape York, Queensland to Port Stephens, New South Wales. It is much less common in the south. It is also found in Papua New Guinea, the Moluccas and Timor. The Spectacled Monarch prefers thick understorey in rainforests, wet gullies and waterside vegetation, as well as mangroves.
Breeding	The Spectacled Monarch builds a small cup nest of fine bark, plant fibres, moss and spider web in a tree fork or in hanging vines, 1 m - 6 m above the ground, often near water. Breeding October to February.
Feeding	The Spectacled Monarch feeds on insects, foraging mostly below the canopy in foliage and on tree trunks or vines.
Status	NCA – Least Concern (Special Least Concern), EPBC Act – Migratory and Marine
Observed Location	Incidental
Reference	www.birdinbackyards.net

Cicadabird *Coracina tenuirostris*	
Description	Small cuckoo-shrike. Male is blue-grey with the flight and tail feathers black with the edge grey. Females have pale eyebrow and browner above with buff below and fine bars. They are 24 – 26 cm in size (pg 244)
Habitat	Located in Northeast Queensland their habitat is in forest and woodlands (pg 244)
Breeding	Known to be cooperative breeders were several adults' help at the nest. The small nests are built on horizontal branches or forks. They sometimes use the empty nests of

	other bird's species; the mud nest of the Magpie-Lark is a favourite choice. Breeding season is mainly October through April. (pg 386)
Feeding	Forage for insects over the outer foliage of trees. Sometimes they flop or 'crash' with outstretched wings and tail to grab an insect and disturb others. They also hawk flying insects from a static perch or alight on the ground to pick up food. Some berries and soft fruits are eaten (pg 386)
Status	NCA – Least Concern (Special Least Concern), EPBC Act – Nil
Observed Location	Site 7,8, 11
Reference	Field Guide to the Birds of Australia, Simpson and Day, 6th edition, 1999

Rufous Fantail *Rhipidura rififrons*	
Description	The eyes, bill, and legs are dark brown. The eyebrow is rofous. The rest of the head, mantle, and wings are grey-brown. The Throat is white and the upper chest has a black band. The underparts are white while the back and tail base are orange-rufous. The shortish tail is blackish with a white tip. They are 15 – 16 cm in size. The young are duller, browner and their markings are less distinct. (pg 230)
Habitat	The Rufous Fantail is found in northern and eastern coastal Australia, being more common in the north. It is also found in New Guinea, the Solomon Islands, Sulawesi and Guam. (http://www.birdsinbackyards.net/species/Rhipidura-rufifrons) The live in wet forest, less often open forest and sometimes on the edge of mangroves. Often in deep shade near the ground. (pg 230).
Breeding	Build up cup shaped nests, with some 'wine-glass' stems underneath. Two to three eggs are laid, variable in colour and spotted. The breading season is October through to February. (pg 385)
Feeding	The Rufous Fantail feeds on insects, which it gleans from the middle and lower levels of the canopy. It is a very active feeder and constantly fans tail and flicks wings and body while foraging. (http://www.birdsinbackyards.net/species/Rhipidura-rufifrons)
Status	NCA – Least Concern (Special Least Concern), EPBC Act – Migratory and Marine
Observed Location	Not observed – Wildlife Online.
Reference	Field Guide to the Birds of Australia, Simpson and Day, 6th edition, 1999 www.birdsinbackyards.net

Short-beaked echidna *Tachyglossus aculeatus*	
Description	A robust ground dweller with strong, sharp spines covering top of head, back and tail. The snout is tubular and naked with a tiny mouth and nostrils at the tip. It is a powerful digger with short legs and long claws with fore claws spade like and the hind claws directed backwards. There is also a second hind claw used for grooming. Fur varies from dark brown to straw coloured. (pg 44)

Habitat	Located all around Australia. In most terrestrial habitats except intensively managed farmland. They are common to sparse. (pg 44)
Breeding	Mating period is June through to September. The single egg is carried in the pouch and hatches within 10 days and later the juvenile is carried in a pouch on the belly for approximately 3 months, then left in a nest or burrow, and eventually weaned when about 8 months old. (pg 44).
Feeding	Feeder on ants, termites and other soil invertebrates, particularly beetle larvae. Food exposed by powerful digging and tearing into the soil or rotten woods with forelimbs and then licked up with their long, sticky tongues. (pg 44)
Status	NCA – Least Concern (Special Least Concern), EPBC Act - Nil
Observed Location	Not observed – Wildlife Online
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Beccari's Free-tailed Bat *Mormopterus beccarii*	
Description	Heaviest Mormopterus. They have triangular shaped ears, and a flattened muscular body. Their fur of underparts is mid dull brown with whitish base to hairs. The underparts are distinctly paler. The bare skin is dark grey-brown. Wings are short, narrow and pointed. Mostly roosts in tree hollows also roof cavities and under peeling bark. (pg150)
Habitat	They are widespread and common across northern Australia. They occupy a wide range of habitats from rainforests to savannah woodland, arid shrub lands and grasslands. Common along inland watercourses. (pg150)
Breeding	Breeding season is October to January where a single young is born.
Feeding	Forages above canopy or lower in open areas. They often forage over water. They are agile of the ground and may obtain some prey on the ground. (pg150)
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A1 A3 A6
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Chocolate Wattled Bat *Chalinolobus morio*	
Description	Their fur uniformly rich brown with inland populations paler with contrasting pale grey underparts. The ears are short and rounded. The muzzle is short with distinct furred ridge between its eyes. The lower lip is small, rounded and not obvious. Roosts in tree hallows, variety of artificial cavities and rarely in caves. (pg 154)
Habitat	Located across southern Australia and the east coast until about Townsville. Common in a wide range of habitats from subalpine woodland to arid plans. (pg 154)
Breeding	One or two young born in October to November. (pg 154)
Feeding	Forages for flying insects below the canopy. (pg 154)

Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A1
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Eastern Forest Bat *Vespadelus pumilus*	
Description	They have long, dense, dark brownfur that is slightly paler below. Their bare skin is dark bornw to blaickish in colour. They are known to roost in tree hollows. (pg 160)
Habitat	Recorded at scattered sites along Great Dividing Range from Atherton Table land in north Queensland to about Newcastle, New South Wales. Found in wet forest at all altitudes. (pg 160)
Breeding	Not documented. (pg 160)
Feeding	Not documented. (pg 160)
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A1
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Eastern Free-tailed Bat *Mormopterus ridei*	
Description	Their fur is uniformly rich brown. Their face is naked with wrinkled lips. Their ears are triangular. Wings are short, narrow and pointed. Known to roost in tree hallows, in buildings or man-made cavities. (pg 152)
Habitat	Eastern Australia from Cooktown to south-western Victoria. Range west to Great Dividing Range. (pg 152)
Breeding	Give birth to a single young during the summer or the wet season in northern Australia. (pg 152)
Feeding	
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A1 A3 A5
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Gould's Wattled Bat *Chalinolobus gouldii*	
Description	Largest lobe-lipped bat in Australia. Fur of underparts distinctly bicoloured with head blackish and shoulders brownish and the underneath is mid-brown. Distinct fleshly lobe at base of ear near corner of mouth and a distinct lobe on lower lip. Roosts in tree hallows and buildings. (pg 154)

Habitat	Common throughout mainland Australia except up near Cape York Peninsula. Found in most habitats except treeless deserts. Common in many towns and cities. (pg 154)
Breeding	Mates in March to June; births in November to January and twins are common. (Pg 154)
Feeding	
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A3 A6
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Greater Broad-nosed Bat *Scoteanax rueppellii*	
Description	They are large and robust with a broad head and short, squarish muzzle. Their ears are widely spaced but are short with a rounded apex and concave rear edge immediately below the apex. Upperparts vary from mid-brown to dark cinnamon-brown. The crown is paler and underparts are tawney-olive. Bare skin of face, ears and flight membranes are pinkish brown. Roosts in tree hallows. (pg 164)
Habitat	Coastal along Eastern Australia from Carbine Tableland in North-eastern Queensland to South-eastern New South Wales. Ususally in tall wet forest, extending into drier forest along gullies. (pg 164)
Breeding	Single young born in January. (pg 164)
Feeding	Large insects. May also eat small bats. (pg 164)
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A3
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Hoary Wattled Bat *Chalinolobus nigrogriseus*	
Description	Shaggy, dark grey fur with pale tips giving it a frosted appearance. Underparts are grey-brown. Their lobes are poorly developed. Roosts in tree hallows and also in rock crevices. (pg 154)
Habitat	Common across northern Australia from about Derby in Western Australia to Cape York, then increases in uncommon southwards to North-eastern New South Wales. Occupies a range of vegetation included vine forest, tropical savannah, dry sclerophyll forest, coastal scrub. (pg 154)
Breeding	Two young born in September and October. (pg 154)
Feeding	
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A3 A6

Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Little Broad-nosed Bat/Northern Broad-nosed Bat *Scotorepens greyii/S.sanborni*	
Description	Slender body with short, squarish, hairless muzzle with distinct swollen glandular area on each side. Body colour is variable. Fur of upperparts is yellow-brown to redish-brown while underparts are pale grey. Conspicuous glandular tubercule between corner of mouth and base of ear. Roosts in tree hallows and old buildings. (pg 166)
Habitat	Widespread across Northern and Eastern Australia. Locally common in variety of arid and tropical habitats, particularly along streams through open woodland and savannah, but also monsoon forest and paperbark forest. (pg 166)
Breeding	1 or 2 young born in November. (pg 166)
Feeding	May forage on ground or other surfaces. (pg 166)
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A2 A3 Incidental
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Northern Free-tailed Bat *Chaerephon jobensis*	
Description	They have a pig-like muzzle with a greatly wrinkled upper lip. Upper jaw strongly overhangs the lower jaw. Inner margins of ears are joined across the forehead. Throat pouch is absent. Fur is uniformly chocolate brown above, paler and greyer below. Roosts in tree hollows, caves and buildings. (pg 150)
Habitat	Found over most of Northern Australia of wide variety of habitats including semni-arid. (pg 150)
Breeding	Single young born in November and December. (pg 150)
Feeding	Forages above canopy with fat direct flight; lower in open habitats or over water. (pg 150)
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A3 A6
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Yellow-bellied Sheath-tailed Bat *Saccolaimus flaviventris*	
Description	Readily distinguished by size, glossy black upperparts and white or creamy yellow underparts, it has a black small, flat head and long muzzle. Long, rubber and leathery ears with a bristly tail. Males have well-developed throat pouch while females are bare in the area with an outlined ridge of skin. Roosts in small groups in tree hallows and in treeless areas are known to roost in burrows of terrestrial animals. (pg 146)

Habitat	Common in northern Australia but rare late summer- autumn visitors to the south. Occurs in most environments from wet forests to deserts. (pg 146)
Breeding	Single young born in December to March. (pg 146)
Feeding	
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	A2 A3 A4 A6
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

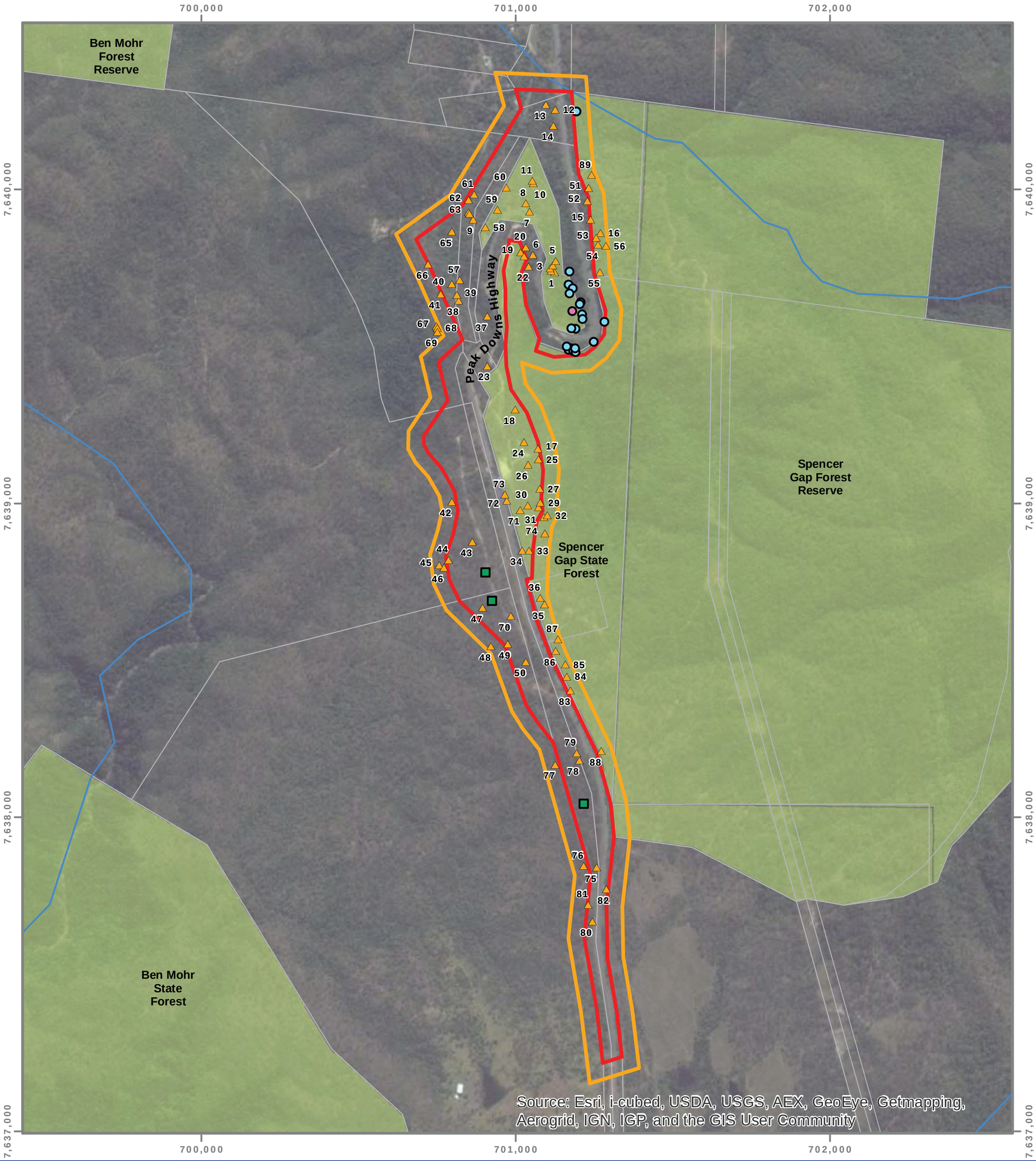
Tube-nosed Bat / Flute –nosed Bat *Murina florium*	
Description	Diagnostic tubular nostrils pointing sideways from tip of muzzle. Ears are broad and rounded with distinct notch low on rear edge. Their tragus is short and narrow. They have long dence fur and the upperparts are rufous-brown to grey brown while their underparts are are mid grey. Their fur covers much of the tail membrane. Roosts beneath hanging clusters of leaves or in suspended nests of scrub-wrens or ferns-wrens. (pg 156)
Habitat	Confined to Tropical rainforest and adjacent wet sclerophyll forest 200-1000m asl in north-eastern Queensland. (pg 156)
Breeding	
Feeding	Forages in mid to upper canopy where it gleans arthropods from rainforest trees. (pg 156)
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	Site 1
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Squirrel Glider *Petaurus norfolcensis*	
Description	Their upperparts are pearl-grey with a blackish midline of varying width from between eyes to mid back. Darkest and broadest colour on head. Blackish patches around the eyes and alternate black and cream patches at base of ear. The edge of the gliding membrane is blackish with white fringe. White upperparts of sides of face and below eyes. Tale is pale grey and blackish for terminal half of to third and then blacker in colour. Nocturnal, arboreal and can glide up to 90m. (pg 92)
Habitat	Along Great dividing Range from central Cape York to near Stawell, Western Victoria in dry sclerophyll forest on inland sloped and nearby riverine corridors in South-east Queensland and New South Wales north of Sydney also in damp coastal eucalypt/banksia forest and woodland. Locally common but threatened in south habitat because of fragmentation.
Breeding	Two young born between May and December. (pg 92)
Feeding	Eats arboreal arthropods, nectar, pollen, manna, and sap. (pg 92)

Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	Not observed – Wildlife Online
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

Sugar Glider *Petaurus breviceps*	
Description	The upper parts are pearl-grey and browner in northern spices. They have a blackish middling from between the eyes to lower back with blackish patches around their eyes and alternative black and cream patches at the base of their ears. The edge of the gliding membrane is blackish fringed with white. Underparts are pale grey or creamy yellow. Their tail is slightly tapered grey to black tipped white. Their muzzle is short, rounded, and strong. Nocturnal, arboreal and can glide up to 90m. (pg 92)
Habitat	Common, widespread in wet, dry sclerophyll forest woodland from cool-temperate South-east to wet/dry tropical north. (pg 92)
Breeding	Constructs leaf nest in hollows. In south births occur in July and august. In the north births occur earlier. Litter size is usually two. (pg 92)
Feeding	Eats arboreal, nectar, pollen and manna. (pg 92)
Status	NCA – Least Concern (Colonial Breeder), EPBC Act - Nil
Observed Location	Site 3
Reference	A field guide to the Mammals of Australia, Peter Menkhorst and Frank Knight, 2001

ATTACHMENT C – LOCATION OF HABITAT TREES (EcoSM, 2013)



Legend

- Study Area
- Buffer
- Watercourse
- Protected Areas
- Cadastral Boundaries
- Habitat Tree (1-98)

Significant Fauna Species Records

- Koala (Phascolarctos cinereus) - Vulnerable (EPBC Act)

Significant Flora Species Records

- Veiny Whitewood (Atalaya rigida) - Near Threatened (NC Act)
- Rough Malletwood (Rhodamnia pauciovulata) - Near Threatened (NC Act)

Figure 3 : Significant species records

Eton Range

Map Number: 13025_03_d
Date: 19 December 2012
Map Projection: MGA94 (Zone 55)

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ecological survey & management

Table A2: Habitat trees in the Study Area

Tree No.	Latitude	Longitude	Species	Hollow Size	Location of Hollow	Number of Hollows	Nest Present?
1	-21.333218	148.939269	*Corymbia intermedia*	Small	Branch	Several	
2	-21.333172	148.939156	*Corymbia intermedia*	Medium	Branch	Several	
3	-21.333107	148.939133	*Corymbia intermedia*	Medium	Trunk	Several	
4	-21.333012	148.939216	*Corymbia intermedia*	Medium	Trunk	Several	
5	-21.332894	148.939292	*Corymbia intermedia*	Small	Branch	Several	
6	-21.332723	148.938601	*Corymbia intermedia*	Medium	Branch	Numerous	
7	-21.331482	148.938483	*Eucalyptus platyphylla*	Small	Branch	Several	
8	-21.331248	148.938367	*Corymbia intermedia*	Small	Branch	Several	
9	-21.33173	148.936755	*Corymbia intermedia*	Medium	Trunk	One	
10	-21.330672	148.938588	*Corymbia intermedia*	Small	Branch	One	
11	-21.330591	148.938553	*Eucalyptus platyphylla*	Small	Branch	Numerous	
12	-21.328542	148.939232	*Eucalyptus platyphylla*	Medium	Branch	Several	
13	-21.328401	148.938944	"Stag"	Small	Branch	Several	
14	-21.329	148.939176	*Corymbia intermedia*	Small	Branch	Several	
15	-21.331689	148.940358	*Corymbia intermedia*	Small	Branch	Several	Termitorium
16	-21.332069	148.940662	*Corymbia intermedia*	Small	Branch	Several	
17	-21.338293	148.938828	*Eucalyptus portuensis*	Small	Branch	Several	
18	-21.337174	148.938114	*Eucalyptus portuensis*	Small	Branch	Several	
19	-21.332652	148.938224	*Eucalyptus portuensis*	Small	Branch	Several	
20	-21.332497	148.938375	*Eucalyptus portuensis*	Medium	Branch	Several	
21	-21.332771	148.938323	*Eucalyptus portuensis*	Small	Branch	Several	
22	-21.333058	148.938477	*Corymbia intermedia*	Small	Branch	Several	
23	-21.335936	148.937238	*Eucalyptus portuensis*	Small	Branch	One	

Tree No.	Latitude	Longitude	Species	Hollow Size	Location of Hollow	Number of Hollows	Nest Present?
24	-21.338106	148.938397	*Eucalyptus portuensis*	Small	Branch	Several	
25	-21.338606	148.938842	*Eucalyptus drepanophylla*	Small	Trunk	Several	
26	-21.338765	148.938528	*Eucalyptus drepanophylla*	Small	Branch	Several	
27	-21.339447	148.938895	"stag"	Small	Trunk	Several	
28	-21.339971	148.938868	"stag"	Medium	Trunk	Several	
29	-21.339849	148.938921	*Eucalyptus portuensis*	Small	Branch	Several	
30	-21.339928	148.938527	*Eucalyptus portuensis*	Small	Trunk	Several	
31	-21.340253	148.939041	*Corymbia citriodora ssp. citriodora*	Medium	Branch	Several	
32	-21.340209	148.939135	*Corymbia citriodora ssp. citriodora*	Medium	Branch	Several	
33	-21.341232	148.938586	*Eucalyptus portuensis*	Small	Branch	Several	Termitorium
34	-21.341232	148.938377	"stag"	Medium	Branch	Several	
35	-21.342769	148.939078	*Eucalyptus exserta*	Medium	Branch	One	
36	-21.342588	148.93896	*Eucalyptus exserta*	Medium	Branch	Several	
37	-21.334512	148.937216	*Eucalyptus portuensis*	Medium	Trunk	Several	
38	-21.334066	148.936341	*Eucalyptus platyphylla*	Small	Branch	One	
39	-21.333907	148.936279	*Eucalyptus platyphylla*	Small	Branch	Several	
40	-21.333589	148.936123	*Eucalyptus platyphylla*	Medium	Trunk	One	
41	-21.333885	148.93579	*Corymbia intermedia*	Medium	Trunk	One	
42	-21.339854	148.936198	*Eucalyptus drepanophylla*	Medium	Branch	Several	
43	-21.340992	148.936844	"stag"	Medium	Trunk	Several	
44	-21.341515	148.936119	"stag"	nil	nil	nil	Termitorium
45	-21.341673	148.935841	*Eucalyptus exserta*	Medium	Trunk	Several	

Tree No.	Latitude	Longitude	Species	Hollow Size	Location of Hollow	Number of Hollows	Nest Present?
46	-21.341747	148.935979	*Eucalyptus exserta*	Small	Branch	Several	
47	-21.342888	148.937183	*Corymbia citriodora ssp. citriodora*	Small	Branch	Several	
48	-21.344	148.937457	*Corymbia citriodora ssp. citriodora*	Medium	Trunk	Several	
49	-21.343923	148.937967	*Lophostemon suaveolens*	Small	Trunk	Several	
50	-21.344426	148.938534	"stag"	Medium	Trunk	Several	
51	-21.330777	148.940277	*Eucalyptus platyphylla*	Medium	Trunk	Several	
52	-21.331156	148.94025	*Corymbia intermedia*	*nil*	*nil*	*nil*	Termitorium
53	-21.332207	148.940525	*Corymbia intermedia*	Small	Branch	Several	
54	-21.332406	148.940593	*Corymbia intermedia*	Medium	Branch	Several	
55	-21.333196	148.94066	*Corymbia intermedia*	Small	Branch	Several	
56	-21.33244	148.940839	*Corymbia intermedia*	Small	Branch	Several	
57	-21.333475	148.936367	*Corymbia intermedia*	Medium	Branch	Several	
58	-21.331942	148.937134	*Eucalyptus platyphylla*	Small	Branch	Several	
59	-21.33144	148.937499	*Eucalyptus platyphylla*	Medium	Branch	One	
60	-21.330795	148.93775	*Corymbia intermedia*	Small	Trunk	One	
61	-21.331012	148.936766	*Corymbia intermedia*	Small	Trunk	One	
62	-21.331168	148.936599	*Corymbia intermedia*	Medium	Branch	One	
63	-21.331514	148.936609	*Eucalyptus platyphylla*	Medium	Trunk	Several	
64	-21.33156	148.936641	*Corymbia intermedia*	Small	Trunk	One	
65	-21.332085	148.936103	*Corymbia tessellaris*	Small	Branch	Several	
66	-21.333028	148.935388	*Eucalyptus drepanophylla*	Small	Trunk	One	
67	-21.33481	148.935667	*Corymbia intermedia*	Medium	Trunk	Several	

Tree No.	Latitude	Longitude	Species	Hollow Size	Location of Hollow	Number of Hollows	Nest Present?
68	-21.334857	148.935697	*Corymbia intermedia*	Medium	Branch	Several	
69	-21.33497	148.935697	*Corymbia intermedia*	Small	Branch	Several	
70	-21.343121	148.938057	*Eucalyptus exserta*	*nil*	*nil*	*nil*	Termitorium
71	-21.34006	148.938301	*Corymbia citriodora ssp. citriodora*	Small	Branch	Several	
72	-21.339796	148.937882	*Corymbia citriodora ssp. citriodora*	Medium	Branch	Several	
73	-21.339624	148.937833	*Eucalyptus exserta*	Medium	Branch	Several	
74	-21.340729	148.939068	*Eucalyptus portuensis*	Small	Branch	Several	
75	-21.350314	148.940786	*Eucalyptus portuenis*	Medium	Branch	Several	
76	-21.350277	148.940381	*Corymbia trachyphloia*	*nil*	*nil*	*nil*	Termitorium
77	-21.347365	148.939476	*Eucalyptus portuensis*	*nil*	*nil*	*nil*	Termitorium
78	-21.347248	148.940211	*Corymbia citriodora ssp. citriodora*	Medium	Trunk	Several	
79	-21.347022	148.94012	*Eucalyptus portuensis*	Medium	Branch	Several	
80	-21.351873	148.940671	*Eucalyptus drepanophylla*	*nil*	*nil*	*nil*	Termitorium
81	-21.351388	148.940546	*Corymbia citriodora ssp. citriodora*	Small	Branch	Several	
82	-21.350938	148.941089	*Eucalyptus portuenis*	Medium	Trunk	One	
83	-21.345244	148.939917	*Melaleuca fluviatilis*	Medium	Trunk	One	
84	-21.344837	148.939802	"stag"	Medium	Branch	Several	
85	-21.344494	148.939756	*Eucalyptus platyphylla*	Medium	Branch	Several	
86	-21.344106	148.939444	*Eucalyptus portuensis*	Small	Branch	Several	
87	-21.343766	148.93951	*Eucalyptus portuensis*	Large	Trunk	One	
88	-21.34697	148.940882	*Eucalyptus exserta*	Medium	Trunk	Several	

Tree No.	Latitude	Longitude	Species	Hollow Size	Location of Hollow	Number of Hollows	Nest Present?
89	-21.33041	148.940358	"stag"	Medium	Trunk	One	