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Australian Government
Department of the Environment

Investigation Report

CAS2079 Dartmoor Spencers Track

Clearing of protected species habitat at Dartmoor-Spencers Track by the Victorian Department of Environment Land Water & Planning for a prescribed burn

Prepared by s22
Compliance Officer

07 December 2015

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1 Glossary

Throughout this document, unless otherwise indicated, the following references apply. These references act to clarify this report and are not intended to be authoritative.

Reference	Description
DELWP	Victorian Department of Environment, Land, Water and Planning
The Department	The Department of the Environment
RAP	Regulatory Advisory Panel, Department of the Environment
SERTBC	Red-tailed Black-Cockatoo (south-eastern) (*Calyptorhynchus banksii graptogyne*)
The Act	*Environment Protection and Biodiversity Act 1999*

2 List of appendices

The following appendices form part of this report and should be read in conjunction with this report.

Appendix	Description
A.	RAP Referral and recommendations
B.	Ecology and Heritage Partners Pty Ltd November 2015. Expert Advice Regarding Alleged Clearing of Red-tailed Black Cockatoo (South Eastern) Habitat Dartmoor Victoria
C.	Commonwealth of Australia 2007. National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo Calyptorhynchus banksii graptogyne. Department of the Environment and Water Resources, Canberra
D.	Burnard, T. & Pritchard, R. 2012. National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo, Calyptorhynchus banksii graptogyne (First Draft). Melbourne, Victoria
E.	EPBC Act Policy Statement 1.1 Significant Impact Guidelines, Matters of National Environmental Significance, May 2006
F.	EPBC Act Compliance and Enforcement Policy 2013
G.	Commonwealth of Australia 2015. Species Profile and Threats Database: Calyptorhynchus banksii graptogyne — Red-tailed Black-Cockatoo (south-eastern)

3 Executive summary

3.1 Background

s47B(a)

On 30 July 2015 s22 , Compliance officer, Compliance and Enforcement Branch , made a referral to the Department's Regulatory Advisory Panel regarding the potential significant impact on a threatened species listed under the Act.

RAP endorsement was sought and endorsed to engage a suitably qualified expert to report on the nature and extent of the alleged clearing **(Appendix A)**. s42

s42

3.2 Elements of the offence

s47B(a)

Offence:

Section 18 *Endangered species*

(3) A person must not take an action that:

(a) has or will have a significant impact on a listed threatened species included in the endangered category; or

(b) is likely to have a significant impact on a listed threatened species included in the endangered category.

Civil penalty:

(a) for an individual – 5,000 penalty units

(b) for a body corporate- 50,000 penalty units

3.3 Relevant referral decisions and compliance outcomes

There have been two previous compliance incidents relative to this species which have been found to have a significant impact on the species.

Rocky Lamattina & Sons Pty Ltd

In 2004 and 2005 Rocky Lamattina and Sons Pty Ltd cleared 170 trees that were potential nesting habitat for SERTBC at Acacia Downs, South Australia.

On 17 July 2009 the Federal Court declared by consent that Rocky Lamattina & Sons Pty Ltd took an action likely to have a significant impact on the South-eastern Red-tailed Black Cockatoo in contravention of section 18(3) of the Act and imposed a pecuniary penalty of $220,000 and costs of $22,500.

Justice Mansfield held that this was the minimum penalty having regard to the deliberate nature of the conduct, the indifference to its potential consequences, and the need for the court to fix a penalty that will operate as a deterrent to those who might otherwise be minded to clear native vegetation contrary to section 18(3) of the Act.

The Judge commented that, but for the respondent's early co-operation with the investigation, he would have reached a considerably higher penalty.

Bill Bourchier Pty Ltd

In 2007 and 2010 Bill Bourchier removed 343 buloke trees and 106 eucalypt trees, habitat for SERTBC, in West Wimmera, Victoria.

On 21 October 2013, following a court ordered mediation, Bill Bourchier signed a deed of release through the Federal Court which required the company to pay $70,000, protect 20 ha and regenerate 4,000 buloke trees on the West Wimmera property. Bill Bourchier was also required to enter an agreement which protects other habitat for the endangered SERTBC across his property and comply with a ten year management plan.

Controlled Action decisions

Since 2001 there have been six controlled action decisions.

2009/4810 Iluka Resources Ltd received a controlled action decision on 1 May 2009 to develop and operate open cut mineral sand mine at Horsham, Victoria. Offsets were recommended for the removal of 37 buloke trees and 720 eucalypt species that may provide nesting hollows for SERTBC. The referral was withdrawn in 2012.

2008/3977 Iluka Resources Ltd received a controlled action decisions on 15 March 2009 to develop and operate the Echo mineral sand mine near Horsham, Victoria. Conditions attached to the approval require offsets for the loss of habitat for the SERTBC as a result of the removal of 73 buloke trees that may provide foraging for the species.

2006/2775 On 3 November 2006 Penola Pulp Mill received a controlled action decision to operate a pulp mill near Penola, South Australia. Conditions attached to the approval require that the proponent place a covenant on the remainder of the property for the removal of 24 river red gums that contain large hollows potentially suitable for nesting.

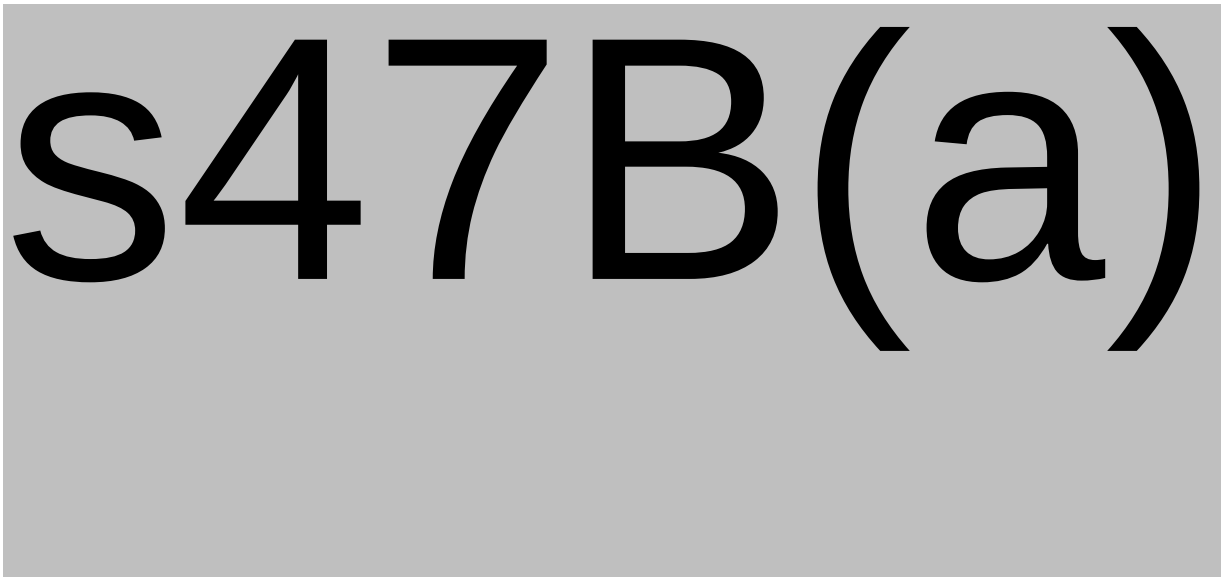
2003/1081 John and Robert Warner received a controlled action decision on the 23 June 2003 for forestry operations at Powers Creek near Edenhope. The action will remove over 1600 of native vegetation, including brown stringybark and red gum trees. The referral was withdrawn in 2005.

2002/766 On 12 January 2004 SN Adams received a controlled action decision for the clearing of 92 buloke trees and installation and operation of a centre pivot system near Bringalbert, Victoria. Conditions attached to the approval require that the proponent protect 300 buloke trees adjacent to the site of the action.

2001/134 On 24 January 2001, Basin Minerals received a controlled action decision for the operation of the Douglas Mineral sand mine near Wimmera, Victoria. The proposal would remove approximately 690 buloke and river red gums that may provide foraging and nesting habitat for the SERTBC. The proposal was withdrawn in 2002.

3.4 Findings and recommendation

The Department has relied on an expert report prepared by Ecology and Heritage Partners Pty Ltd in November 2015. A copy of the report is at **Attachment B**.



……

Shane Gaddes

Assistant Secretary

Compliance and Enforcement Branch

Date: ……

4 Detailed findings

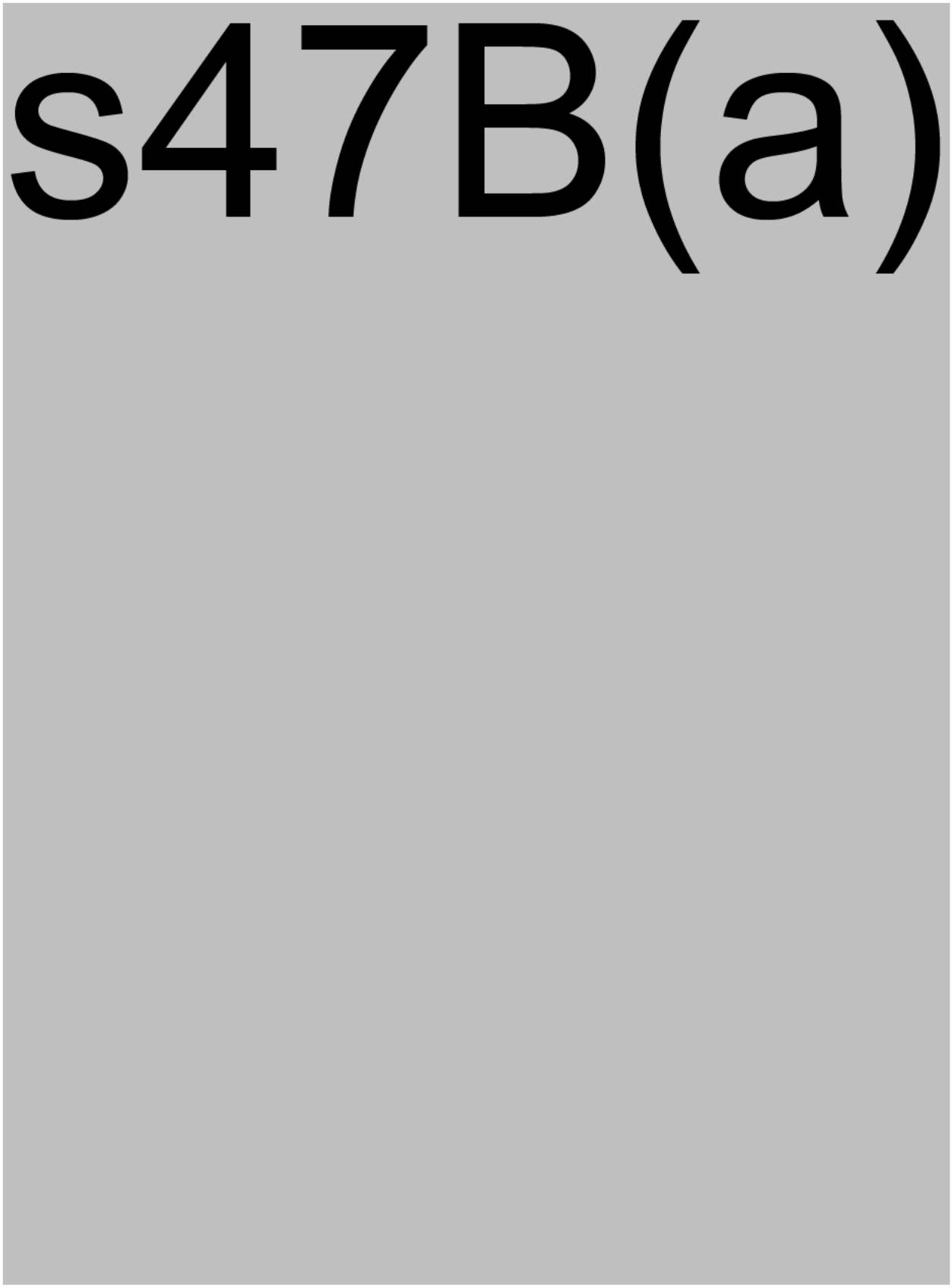
4.1 Background / Investigation

s47B(a)

On 22 June 2015 officers inspected the site accompanied by s47F , Chair of the Red-tailed Black Cockatoo National Recovery team. The National Recovery Team is responsible for guiding and coordinating the management and recovery of the cockatoo across South Australia and Victoria. The team provides specialised technical support in the development of monitoring and conservation management including implementing the Commonwealth National Recovery Plan for the Red-tailed Black Cockatoo.

s47B(a)

On 2 September 2015 officers attended the site accompanied by s47F , Consultant Zoologist from Ecology and Heritage Partners. DELWP representatives on site included s22 , s22 (Program Manager Planning Barwon South West Region) s22 (Operations Manager) and s22 , District Manager Fire and Land, Haywood District.


s47B(a)

4.2 Species information

The Red-tailed Black-Cockatoo (south-eastern) (SERTBC) is listed as an endangered species and is protected under section 18(3) of the Act. The SERTBC was listed under the EPBC Act in July 2000.

SERTBC occurs as a single population in a small area of south-eastern Australia. A map showing the distribution of the population is at Figure 1. Since European settlement, about half of all suitable habitat has been cleared within the bird's current range. The size of the population is estimated to be approximately 1500. The minimum number of breeding birds is estimated at 660. The species is considered to be in decline due to the historic and ongoing removal of its habitat.

Habitat

The habitat critical for the survival of the species is defined as all potential habitat within its 'current normal range' (Figure 2).

The SERTBC is highly specialised, feeding almost entirely on the seeds of two stringybark eucalypts, the Desert Stringybark (*Eucalyptus arenacea*) and Brown Stringybark (*Eucalyptus Baxteri*) and seasonally on Buloke (*Allocasuarina leuhmannii*) seeds. Much of the stringybark feeding habitat in Victoria is on public land.

The two stringybark species do not produce seed every year. Desert Stringybark fruits on a three year cycle and Brown Stringybark on a two to four year cycle. Seed is retained in capsules on the tree, providing a year round food resource. SERTBC prefer larger trees with the heaviest seed crops with fresh seeds as they are easier to access and open. Stringybark that occur on the edges of patches, known as 'edge trees', are known to provide much higher crop yield than trees within the patches. SERTBC prefer long unburnt (10 years post fire) stringybark woodlands for feeding which have on average twice the seed availability as stringybark woodland burnt more recently.

Roosting

SERTBC are known to roost in clumps of tall eucalypts and use the same site each night for many months.

Nesting

SERTBC require large hollows for nesting and may nest in either dead or live trees. Most nest sites occur in very old large eucalypts such as River Red-gums, many of which are on private land. Nests are also known to occur within woodland and forest patches such as Desert and Brown Stringybark. Any eucalypt which forms large (18-50cm) hollows is considered suitable as nesting habitat. Hollows of this size take about 220 years to form.

Research has suggested a relationship between nesting trees and feeding habitat, with nests reported to be within 5 kilometres of stringybark patches greater than 5 hectares.

Threats

Food shortages are the main threat to the long term survival of the SERTBC and are considered a high priority threat to the species.

As the SERTBC feeds on stringybark that has fruited most recently, they quickly use up the new seed crops reducing the foraging value of the area. SERTBC only spend half their day feeding on a new seed crop but months later they will have to spend 90% of their day feeding as they have exhausted all the nearby supplies. As a result, when a new seed crop is produced, there is a recorded nesting success, however years with a lower seed availability can cause major failure in nesting because the male cannot maintain the strength to feed himself and the female. Females are forced to leave the nest to feed while they are incubating, resulting in nesting failure. The impact of natural shortages is exacerbated by the historical removal of feeding habitat and by current activities such as clearing of habitat and deliberately lit fires.

Prescribed burns and wildfires are a high priority threat as they reduce seed availability in stringybark for nine to eleven years. Fire scorches or removes some or the entire stringybark canopy, producing a significant reduction in fruit production.

The reduction of fire intensity in prescribed burns will result in a reduced canopy scorch and allow a quicker recovery of trees to full seed production. Prescribed burns could also be timed to avoid years in which woodlands have new seed crops.

Feeding habitat loss is a high priority threat. An estimated 57% of original woodland habitats of the SERTBC have been lost through clearing. Harvesting of firewood from public land is a concern because it may result in the loss of nest trees or trees with the potential to develop into nest trees. s47B(a)
s47B(a)

Fragmented foraging habitat is used by SERTBC but the energetic costs of foraging in highly fragmented stringybark areas may lead to reduced viability in those areas.

Weed invasion of foraging habitat is a concern where stringybark forests abut pine plantations, such as Dartmoor-Spencers Track. Invasion of pine seedlings pose a significant threat. In areas of highest wildling density up to 40% of stringybark trees are either dying or ageing. Pines suppress the growth of stringybarks and can kill trees they overtop.

Loss of hollow bearing trees and lack of regeneration of future hollow forming trees and declining health of scattered trees on private land are potentially serious threats. Trees containing larger hollows used by SERTBC are likely to be over 220 years old and there is likely to be a serious shortfall in suitable hollow-bearing trees in the decades to come.

Figure 1: *Calyptorhynchus banksii graptogyne Distribution*

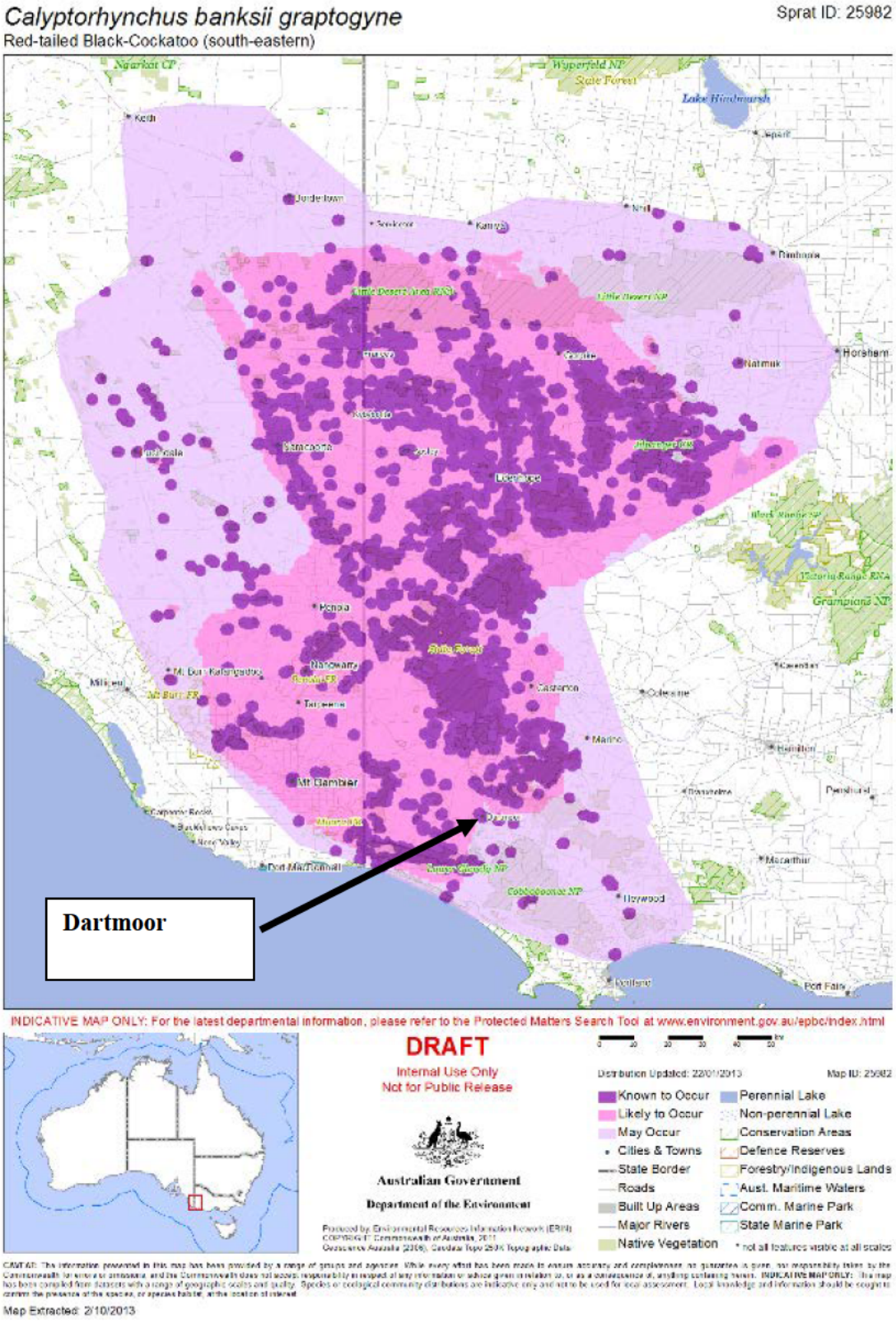


Figure 2: *'Current normal range' for the species*

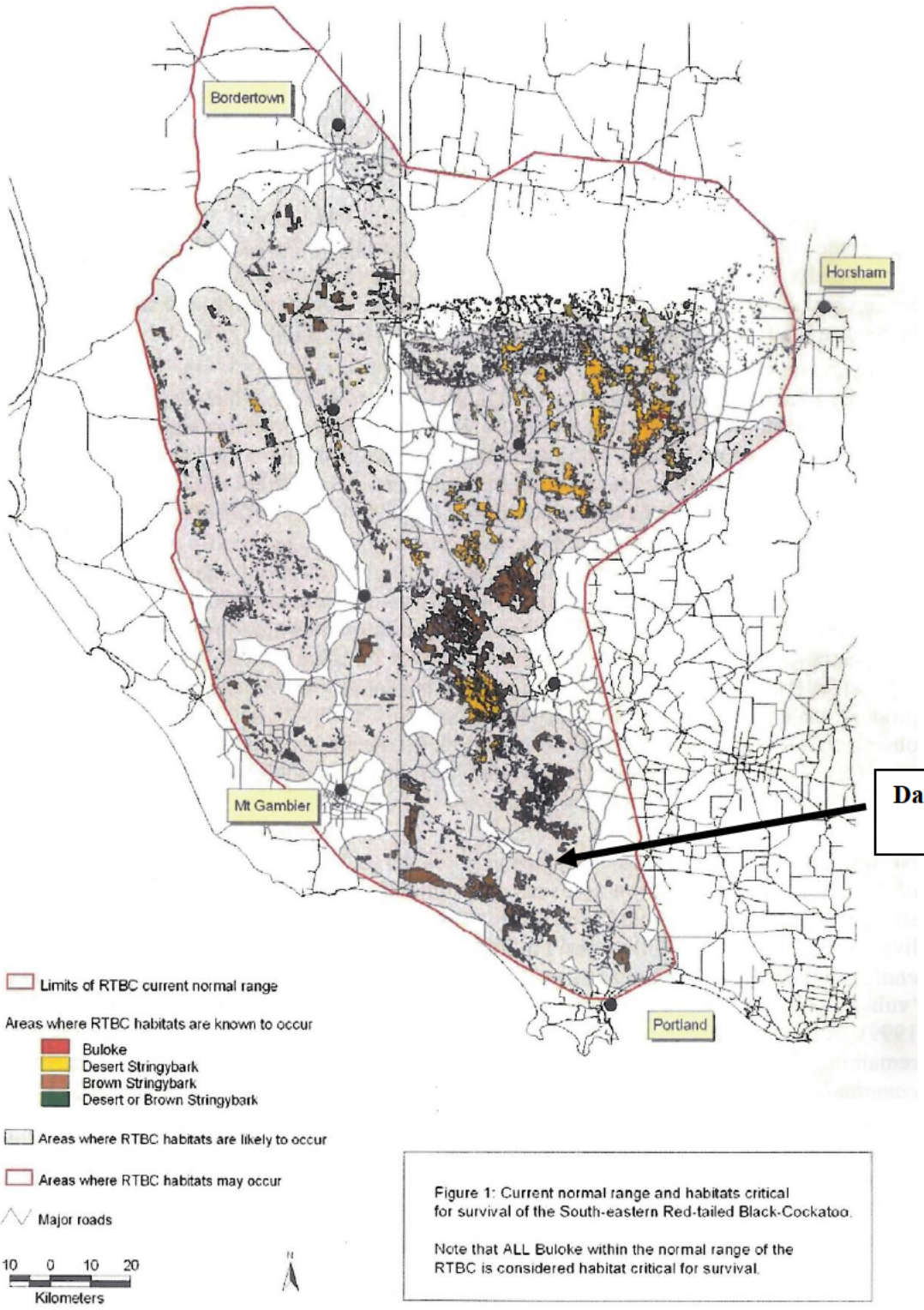


Figure 1: Current normal range and habitats critical for survival of the South-eastern Red-tailed Black-Cockatoo.

Note that ALL Buloke within the normal range of the RTBC is considered habitat critical for survival.

4.3 Species Expert Qualifications

The Department has relied on an expert report prepared by Ecology and Heritage Partners Pty Ltd in November 2015. A copy of the report is at **Attachment A**.

s47F - Consultant Zoologist

s47F conducted the desktop review, field assessment and drafted the report.

s47F

s47F - Director/Principal Ecologist

s47F conducted the technical review and provided expert input into the species ecology and habitat requirements.

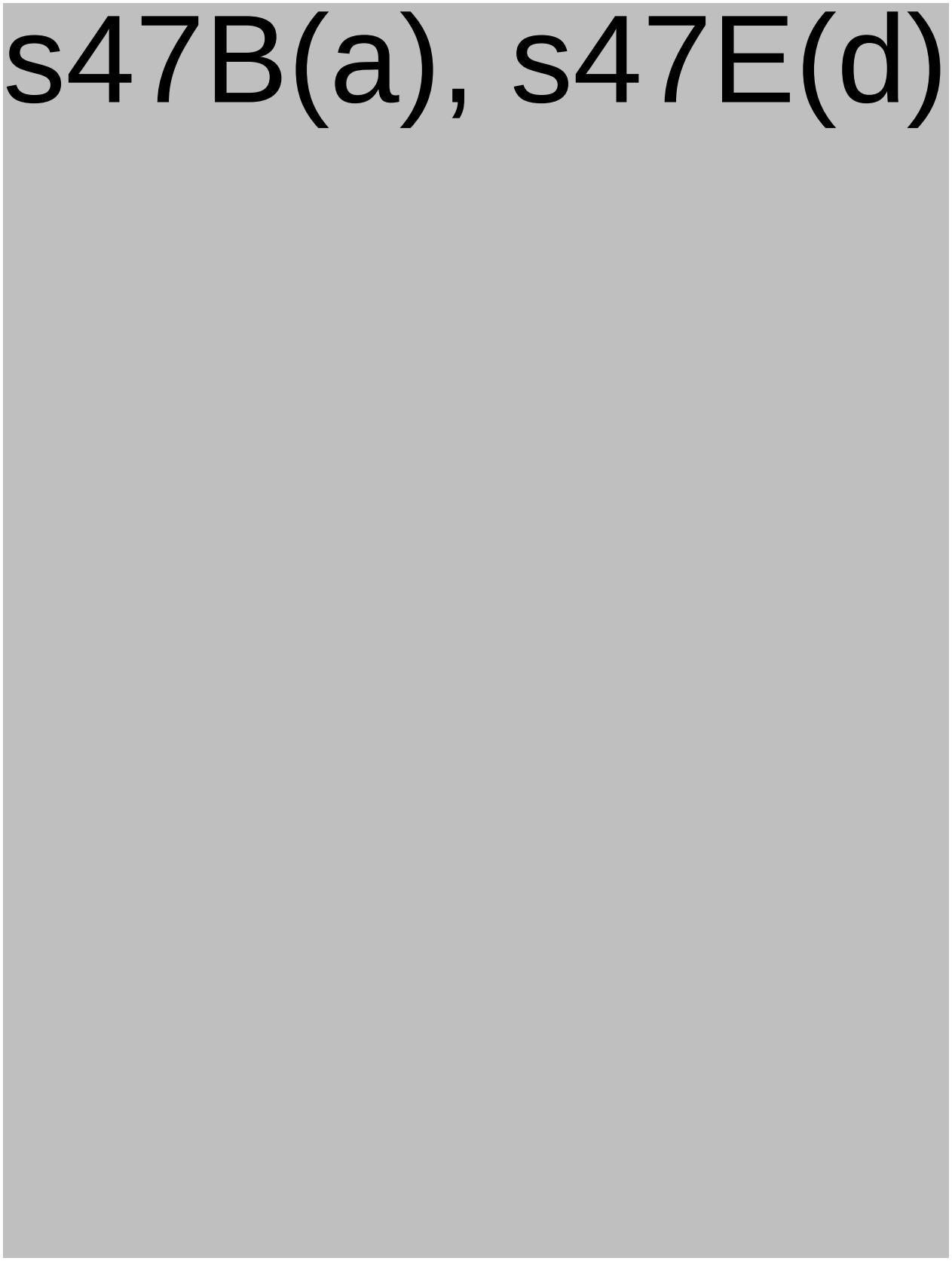
s47F

4.4 Expert methodology for assessment of the property

s47E(d)

4.5 Expert findings

s47B(a), s47E(d)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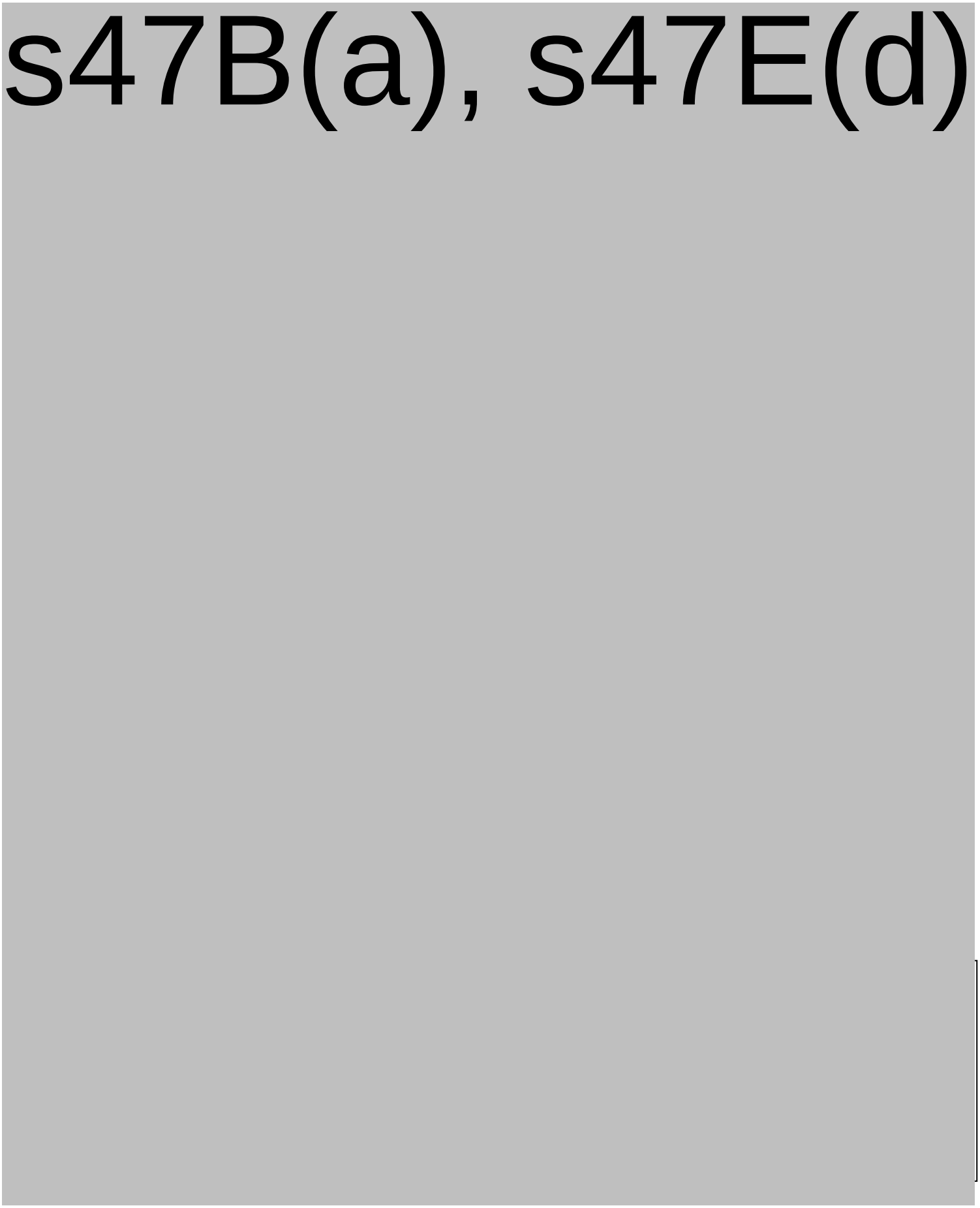

s47B(a), s47E(d)

4.6 National Recovery Plan for the SERTBC

The National Recovery Plan for the South-Eastern Red-tailed Black-Cockatoo *Calyptorhynchus banksii graptogyne* was approved in 2007 and provides recovery objectives and actions for a five year period. The Recovery Plan identifies that the SERTBC population is in a state of decline due to removal of suitable habitat. A copy of the recovery plan is at **Attachment B**.

The Recovery Plan identifies habitat critical to the survival of the species as all potential habitat within its 'current normal range', including nesting, foraging and roosting resources. The removal of such habitat is also identified within the plan and the most recent 2012 (draft) Recovery Plan as a key threatening process. A 2012 (draft) Recovery Plan will cover the next five years and commenced in 2013. A copy of the draft plan is at **Attachment C**.

s47E(d), s47B(a)

The National Recovery Plan for the Red-tailed Black-Cockatoo (south-eastern) Calyptorhynchus banksii graptogyne (Commonwealth of Australia 2005) proposes the following Recovery Actions for this species:

- Identify and protect feeding habitat from clearing.
- Link and reserve feeding habitat.
- Encourage fencing of feeding habitat to protect it from stock.
- Replant feeding habitat, particularly Buloke.
- Identify and reduce threats from fire.
- Reduce threats from weed invasion in feeding habitat.
- Monitor the populations, range and area of occupancy.
- Expand nest site statutory protection.
- Reduce threats from reductions in nest sites.
- Maintain existing artificial nests and monitor their use.
- Identify and protect nest sites from ground predators.
- Assess and reduce illegal trade.
- Locate nest colonies and key blocks of private land.
- Collect information on Buloke use and management.
- Produce and implement a communication strategy.

The 2012 Draft Recovery Plan for the SERTBC provides objectives for the recovery of the species to address key threatening processes and reverse population decline.

Actions that support the objectives include:

Action 1 Protect habitat from loss

Action 2. Plant or encourage regeneration of key habitats

Action 3. Manage threats to the productivity of patches of current feeding habitat

Action 4. Manage threats to the productivity of scattered feed trees

Action 5. Assess and manage direct threats to recruitment

Action 6. Communicate effectively with partners, stakeholders and the community

Action 7. Support community participation in recovery actions

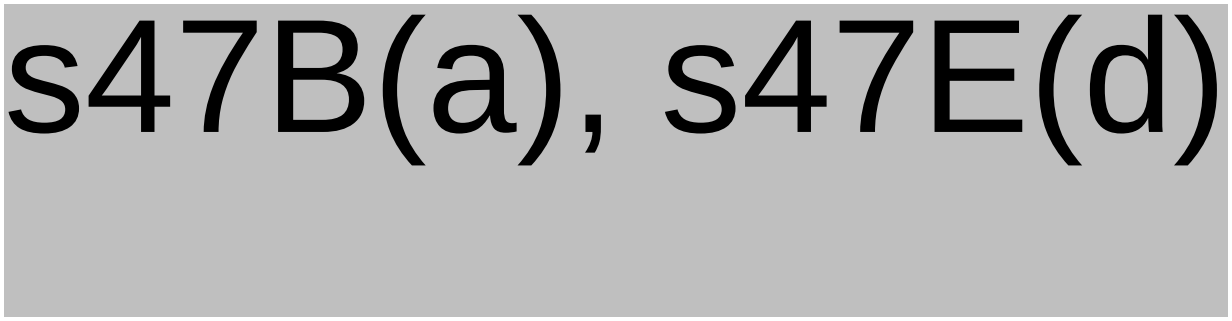
Action 8. Coordinate implementation

Action 9. Monitor the population and habitat

Action 10. Undertake essential research to underpin management actions

4.7 Findings in relation to significant impact assessment

5 Recommendations



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Document 32b

ecology & heritage partners

Final Report

Expert Advice Regarding Alleged Clearing of Red-tailed Black Cockatoo (South Eastern) Habitat

Dartmoor, Victoria

Prepared for

Commonwealth Department of the Environment

November 2015

Ecology and Heritage Partners Pty Ltd

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- s22, s22, s22 and s22 (Commonwealth Department of the Environment) for project information;
- s47F for data supply and technical advice; and
- The Victorian Department of Environment, Land, Water and Planning (DELWP) for access to ecological databases and the provision of information relating to the assessed activity.

GLOSSARY

Acronym	Description
CMA	Catchment Management Authority
IUCN	International Union for Conservation of Nature
DBH	Diameter at Breast Height
CEnvP	Certified Environmental Practitioner
DotE	Commonwealth Department of the Environment
SERTBC	Red-tailed Black Cockatoo (south-eastern subspecies)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EVC	Ecological Vegetation Class
DELWP	Victorian Department of Environment, Land, Water and Planning
FFG Act	*Flora and Fauna Guarantee Act 1988*
VBA	Victorian Biodiversity Atlas (DELWP)

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1 INTRODUCTION

1.1 Background

s47B(a), s47E(d)

1.2 Study Area

s47B(a)

2 RED-TAILED BLACK COCKATOO (SOUTH EASTERN)

2.1 Status

The SERTBC is listed as Endangered under the Commonwealth EPBC Act and threatened under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). In addition, the species is listed as Endangered under the *Action Plan for Australian Birds 2010* (Garnett *et al*. 2011) and the Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2013). The species *Calyptorhynchus banksii* is listed as Least Concern under the International Union for Conservation of Nature (IUCN) Red List (2015). The Red List does not have separate listings for each subspecies (Burnard and Pritchard 2012).

The total population size is estimated to be between 1,500 and 1,800 birds, with maximum counts of numbers known to be alive of 1,404 in 2008 and 1,468 in 2012 (Burnard and Pritchard 2012).

2.2 Description

The SERTBC is one of five species of black-cockatoo that comprise the endemic Australian genus *Calyptorhynchus* (DSE 2006). Males are black with a broad, red tail band that is most noticeable on take-off. Males also have a dark grey bill and a rounded crest that moves forward when erect. Females and immatures have black-brown plumage with fine yellow spots and bars, yellow to orange bands with fine black stripes, and a cream bill (DotE 2015).

The SERTBC is the smallest of the five subspecies and the adult female *graptogyne* is the brightest and most boldly marked of the females. The bill of the SERTBC is finer than that of the other subspecies, presumably an adaptation to its specialised diet (DSE 2006).

2.3 Ecology

The SERTBC has highly specialised food requirements; dependent on the seeds of only three tree species: Brown Stringybark, Desert Stringybark *Eucalyptus arenacea* and Buloke *Allocasuarina luehmannii*. Consumption of other seed sources is negligible (Burnard and Pritchard 2012).

SERTBCs are highly mobile and move throughout their range to exploit variable food resources. Concentrations of birds are reported in some years in areas of Brown Stringybark, and in other years in areas of Desert Stringybark. These movements appear to be in response to the abundance of seed in these two key food species. Both stringybark species only set a new seed crop every few years (with the two species often seeding in different years), but hold seed in capsules on the tree for several years. Buloke, by contrast, provides a seasonal food resource usually in late summer to early autumn, after which seed is dropped from the tree. Movements into Buloke habitat reflect this availability (Burnard and Pritchard 2012).

When few birds are breeding (autumn and winter) large flocks of over 100 birds can be observed feeding together, and several flocks may join together at dusk to visit a watering point (e.g. farm dam or trough) before roosting at a communal roosting site (Burnard and Pritchard 2012).

Most breeding activity occurs in spring and summer, however, active nests have been found throughout the year. Breeding birds are often found in small family groups (2-3 birds), and groups may gather together at communal drinking sites at dusk. Nesting may occur as single nests or in loose clusters. Only females incubate a single egg and brood the young chick, and are fed by the male during this time. The incubation period is approximately 30 days and the nestling period is 87 days (Higgins 1999). Both sexes leave the nest to forage and return to feed older chicks. Fledging success of 10 nests found as eggs between 1998 and 1999 was 30% (R. Hill unpubl. data). It is likely that many pairs fail to fledge any young some years. Food availability and feeding efficiency may limit reproductive success, at least in some years. Breeding males feeding on stringybark have been recorded spending up to 90% of their day actively feeding (Koch 2003); suggesting males may struggle to find enough food to feed themselves, their mate and their chick (Burnard and Pritchard 2012).

Based on previous studies, there is estimated to be a low rate of re-use of known nest sites, with some birds occupying nearby sites in subsequent years (Commonwealth of Australia 2007).

2.4 Habitat Requirements

The habitat critical to survival of the SERTBC is defined as all potential habitat within its 'current normal range' (DotE 2015). Potential habitat includes nesting, foraging and roosting habitat as described below and summarised in Section 3.3.

2.4.1.1 Nesting Habitat

SERTBCs require large hollows (18-50cm) for nesting, which naturally occur in very old, large eucalypts over 220 years old (Gibbons & Lindenmayer 2002). Nests are known from both live and dead trees, and most known nest sites occur in large scattered River Red-gums *Eucalyptus camaldulensis* on private land. However, nests are also known to occur in other eucalypt species and in woodland and forest patches (Burnard and Pritchard 2012). In addition to River Red-gums, SERTBC nests have been recorded in Yellow Gum *Eucalyptus* leucoxylon, Manna Gum *Eucalyptus* viminalis, and Pink Gum *Eucalyptus fasciculosa* as well as Desert Stringybark and Brown Stringybark. Any eucalypt which forms large hollows (entrance dimensions approximately 19 x 18 centimetres; R. Hill unpublished data) is considered suitable as nesting habitat (Maron et al. 2008). It is likely many unknown nest sites occur in patches of habitat, where nest detection is much more difficult (Burnard and Pritchard 2012).

Previous work suggested a relationship between nesting trees and feeding habitat, with all nests reported to be within five kilometres of stringybark patches greater than five hectares in area (Hill & Burnard 2001). This relationship is currently under re-examination with new nesting data, but it is likely that there is some ecologically-significant spatial relationship between breeding and feeding habitat (Burnard and Pritchard 2012).

2.4.1.2 Foraging Habitat

The SERTBC is highly specialised, feeding primarily on the seeds of Desert and Brown Stringybark, and seasonally on the seeds of Buloke. The two stringybark species do not produce seed every year, with flowering years occurring approximately every 2-4 years for Brown Stringybark and approximately every three years for Desert Stringybark. Seed capsules ripen 9-12 months after flowering.

Seed is retained in capsules on the tree, providing a year-round food resource. However, as seed capsules age, they become more woody and insect attack reduces seed load per capsule (Burnard and Pritchard 2012).

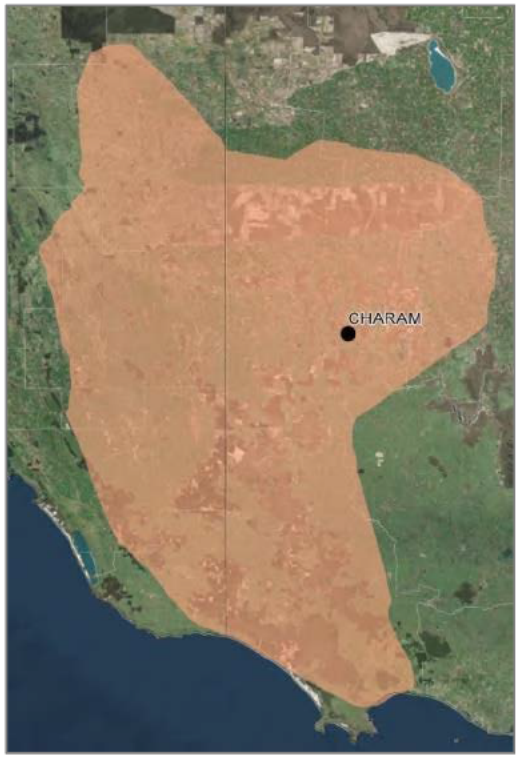
The birds prefer to feed in trees that provide the most efficient feeding opportunities. Larger trees, or trees carrying the heaviest seed crops (often one in the same), are preferred over those carrying less seed. In addition, more recently matured stringybark capsules are preferred over older capsules due to greater ease of opening and higher seed loads within younger capsules (Burnard and Pritchard 2012). Brown and Desert Stringybark trees occurring in paddocks and on the edges of patches are known to provide much higher crop yield than trees within patches - most likely due to reduced light competition and increased soil nutrient/ moisture availability (Maron et al. 2008). Desert Stringybark makes up only 28% of the stringybark habitat in the range, and this species is likely to be a more limiting resource than Brown Stringybark (Koch 2003).

The age at which stringybarks first become available as feeding habitat is not known. Trees grown from coppice that were 10 years old have been used by SERTBC (Hill *et al.* 2003). It estimated that a stringybark tree may need to be at least 15 years old to reach levels of capsule availability preferred by SERTBC (Burnard and Pritchard 2012).

Buloke is dioecious, with separate male and female trees. Although the birds only feed on the female trees (those carrying seed), it is unknown what distribution of male trees is required for successful fertilisation of female trees. Both male and female Buloke trees are therefore critical to the food source for the SERTBC. Buloke seed is produced in most years, although some years are more productive than others. The seed is only held on the tree between late summer and early autumn, so provides a limited, but seasonally preferred, food source. Larger trees carry higher seed capsule loads. Current Buloke habitat appears to be limited to trees over 19 centimetres diameter at breast height (DBH) (est. age 100 years). The cockatoos show a strong preference for Buloke trees over 30 centimetres DBH (est. age 200 years) (Burnard and Pritchard 2012).

The cockatoo's mobility, combined with strong preferences for high efficiency feeding opportunities (more capsules per tree), leads to three important patterns in habitat values (Burnard and Pritchard 2012):

- Larger (older) trees are more productive than smaller trees;
- Scattered paddock trees often provide important food sources in fragmented landscapes because tree size and productivity are stronger predictors of use than tree context; and
- Stringybark trees on patch edges, and in scattered contexts, are many times more productive than stringybark trees within patches.



Inset 1: SERTBC estimated current range (adapted from (Burnard and Pritchard 2012).

2.4.1.3 Roosting Habitat

The SERTBC is known to roost in clumps of tall eucalypts, and sometimes use the same site each night for many months. A previous survey of 19 known roost sites identified that 79% comprised copses of River Red-gums, 16% were in Yellow Gums and 5% in Manna Gums. Thirteen of these sites (68%) were on private land (Commonwealth of Australia 2007).

2.5 Distribution

The SERTBC is endemic to a small area of south eastern Australia, occupying adjacent areas of far south-west Victoria and south-east South Australia (Inset 1). The range extends between Portland, Casterton, Toolondo, Natimuk, Dimboola, Nhill and Kaniva in Victoria and Keith, Lucindale and Mt Gambier in South Australia; with a total extent of occurrence of approximately 18 000km^2. Extralimital records are likely to be vagrants. The species is widespread but rare within this range, and its nomadic movements mean that many habitats are only used occasionally (Burnard and Pritchard 2012).

A detailed account of local distribution is provided in Section 4.1.

3 METHODS

3.1 Contributors and Qualifications

The contributors to the preparation of this report, their qualifications and roles are listed in Table 1.

Table 1 Contributors and their roles

Name	Qualification	Role
s47F (Consultant Zoologist)	s47F	Desktop review, field assessment and reporting
s47F (Director/ Principal Consultant)	s47F	Technical review and expert input into the species ecology and habitat requirements

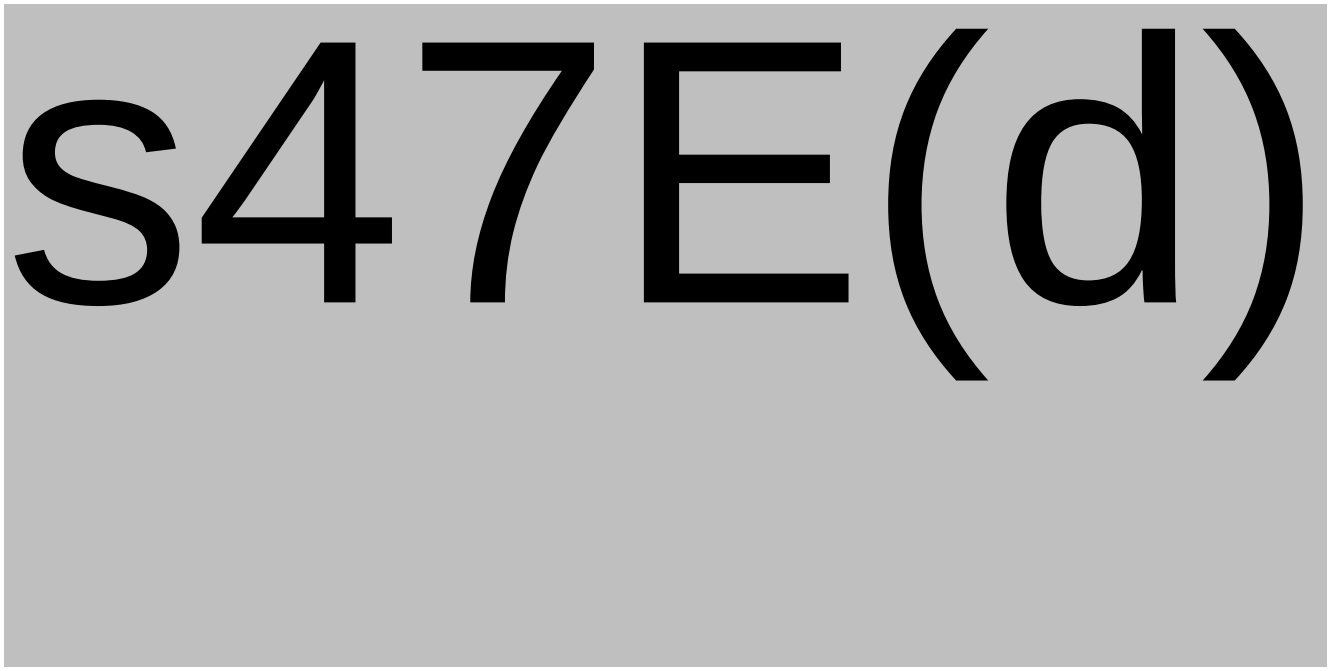
3.2 Desktop Assessment

Relevant literature, online-resources and numerous databases were reviewed to determine the likelihood of SERTBC using habitat resources within the study area. The following information sources were reviewed:

- The Victorian Department of Environment, Land, Water and Planning (DELWP) Biodiversity Interactive Map (DELWP 2015a);
- The Victorian Biodiversity Atlas (VBA) (DELWP 2015b);
- Annual SERTBC count data sourced from the National Recovery Team;
- Information sourced from the National Recovery Team based on a 2014 survey of clearing activities along Casterton-Dartmoor Road;
- Aerial photography of the study area;
- Handbook of Australian, New Zealand and Antarctic Birds Volume 4: Parrots to Dollarbird (Higgins 1999); and
- Relevant literature including the following recovery plans prepared for the species and additional references sited throughout this report:
    - *National Recovery Plan for the South-eastern Red-tailed Black-cockatoo Calyptorhynchus banksii graptogyne* (Commonwealth of Australia 2007)
    - *National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo, Calyptorhynchus banksii graptogyne* (First Draft) (Burnard and Pritchard 2012).

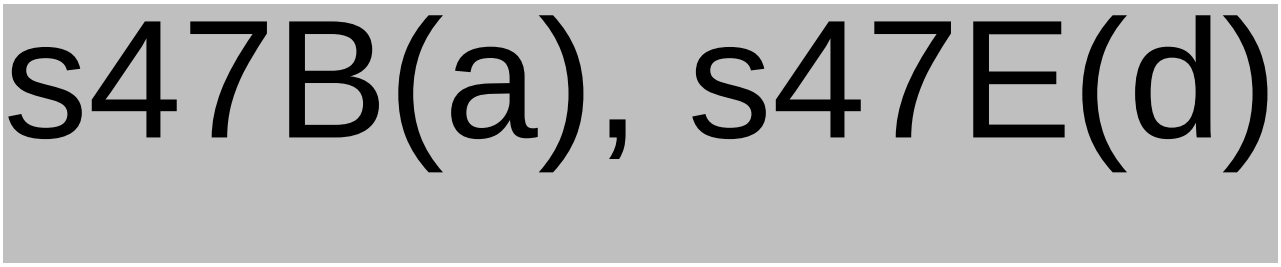
3.3 Field Assessment

The study area was inspected to determine the nature and extent of habitat removal, as well as the type and quality of habitats affected. The rapid field assessment was completed on 2 September 2015 by a qualified Consultant Zoologist accompanied by two representatives of DotE. The assessment supplemented preliminary inspections completed by DotE in February 2015.



3.4 Assessment Qualifications and Limitations

The findings presented in this report are based on a detailed desktop review and rapid field assessment. Conjecture within this report is limited to the following:



- Identifying the species of trees cleared and removed - Assumptions within this report are based on the composition of vegetation within the surrounding patches and detailed analysis of aerial photography; and
- Identifying the likelihood of cleared trees supporting hollows suitable for SERTBC nesting - The level of uncertainty is acknowledged accordingly and no definitive statements have been made regarding the potential for removed trees to provide suitable nesting resources.

Data collected during the desktop review and field assessment, and information obtained from relevant sources (e.g. biological databases and relevant literature) are considered adequate to provide a reasonable account of the action undertaken and address the three key assessment objectives listed in Section 1.1.

4 RESULTS

s47B(a), s47E(d)

s47B(a), s47E(d)

5 CONCLUSION

s47B(a), s47E(d)


s47B(a), s47E(d)

REFERENCES

Burnard, T. & Pritchard, R. 2012. National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo, *Calyptorhynchus banksii graptogyne* (First Draft). Melbourne, Victoria.

Commonwealth of Australia 2007. National Recovery Plan for the South-eastern Red-tailed Black-Cockatoo Calyptorhynchus banksii graptogyne. Department of the Environment and Water Resources, Canberra.

DEH (Department of the Environment and Heritage) 2005. Threat Abatement Plan for Beak and Feather Disease Affecting Endangered Psittacine Species. [Online]. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/beak-feather.html.

DELWP (Department of Environment, Land, Water and Planning) 2015a. Biodiversity Interactive Map. URL: http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim. Accessed: 23/09/2015. Melbourne, Victoria.

DELWP (Department of Environment, Land, Water and Planning) 2015b. Victorian Biodiversity Atlas. Sourced from: "VBA_FAUNA25" and "VBA_FAUNA100", 2015. Melbourne, Victoria.

DELWP (Department of Environment, Land, Water and Planning) 2015c. Firewood Collection Information Website. URL: http://delwp.vic.gov.au/parks-forests-and-crown-land/firewood/barwon-south-west-region. Accessed 26/10/2015. Melbourne, Victoria.

DEWHA (Commonwealth Department of the Environment, Water, Heritage and the Arts) 2013. EPBC Act Significant Impact Guidelines 1.1 - Matters of National Environmental Significance. URL: http://www.environment.gov.au/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance. Accessed 23/09/2015. Canberra, ACT.

DotE (Commonwealth Department of the Environment) 2013. Compliance and Enforcement Policy, Environment Protection and Biodiversity Conservation Act 1999. URL: https://www.environment.gov.au/epbc/publications/epbc-compliance-and-enforcement-policy. Accessed 23/09/2015. Canberra, ACT.

DotE (Commonwealth Department of the Environment) 2015. Species Profile and Threats Database: Calyptorhynchus banksii graptogyne — Red-tailed Black-Cockatoo (south-eastern). URL: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25982#distribution. Accessed 23/09/2015. Canberra, ACT.

DSE (Victorian Department of Sustainability and Environment) 2006. Flora and Fauna Guarantee Act 1988 Action Statement No. 37: South-eastern Red-tailed Black-Cockatoo Calyptorhynchus banksii graptogyne. Melbourne, Victoria.

DSE (Victorian Department of Sustainability and Environment) 2013. Advisory List of Threatened Vertebrate Fauna in Victoria. URL: http://www.depi.vic.gov.au/environment-and-wildlife/threatened-species-and-communities/threatened-species-advisory-lists. Accessed: 23/09/2015. Melbourne, Victoria.

Federal Court of Australia 2013. Practice Note Cm 7: Expert Witnesses in Proceedings in the Federal Court of Australia. URL: http://www.fedcourt.gov.au/law-and-practice/practice-documents/practice-notes/cm7. Accessed: 23/09/2015. Canberra, ACT.

Garnett, S.T., Szabo, J.K. & G. Dutson. 2011. Action Plan for Australian Birds 2010. CSIRO, Melbourne.

Gibbons, P., & Lindenmayer, D. (2002). 'Tree Hollows and Wildlife Conservation In Australia.' (CSIRO Publishing: Melbourne.)

Higgins, P.J., ed. 1999. Handbook of Australian, New Zealand and Antarctic Birds Volume 4: Parrots to Dollarbird. Melbourne: Oxford University Press.

Hill, R. & T. Burnard. 2001. A Draft Habitat Management Plan for the South-eastern Red-tailed Black-Cockatoo. Unpublished report to the Red-tailed Black-Cockatoo Recovery Team

Hill, R., Maron, M, & Kirkwood, J. 2003. Advice on the Development of Significance Guidelines Regarding Clearance of Red-Tailed Black-Cockatoo Habitat. A report to Environment Australia. South-eastern Red-tailed Black-Cockatoo Recovery Team.

IUCN (International Union for Conservation of Nature) 2015. The IUCN Red List of Threatened Species. URL: http://www.iucnredlist.org. Accessed: 23/09/2015.

Koch, P. 2003. Factors influecing food availability for the endangered south-eastern Red-tailed Black-Cockatoo Calyptorhynchos banksii graptogyne in remnant stringybark woodland, and implications for management. PhD thesis, University of Adelaide, Adelaide.

Maron, M., Koch, P., Freeman, J., Schultz, S, & Dunn, P. Modelling and planning to increase future habitat of the Red-tailed Black-Cockatoo. Report prepared for the Wimmera Catchment Management Authority, Victoria.

FIGURES

Figure 1

Study Area Location

Provision of expert advice regarding clearing of Red-tailed Black Cockatoo (South Eastern) habitat in Victoria

ecology & heritage partners

Legend

Study Area

Localities

Roads

Freeway
Major Road
Collector Road
Minor Road
Proposed Road
Walking Track

Watercourse

Minor Watercourse
Major Watercourse

Parks and Reserves

0 0.75 1.5

Kilometers

N

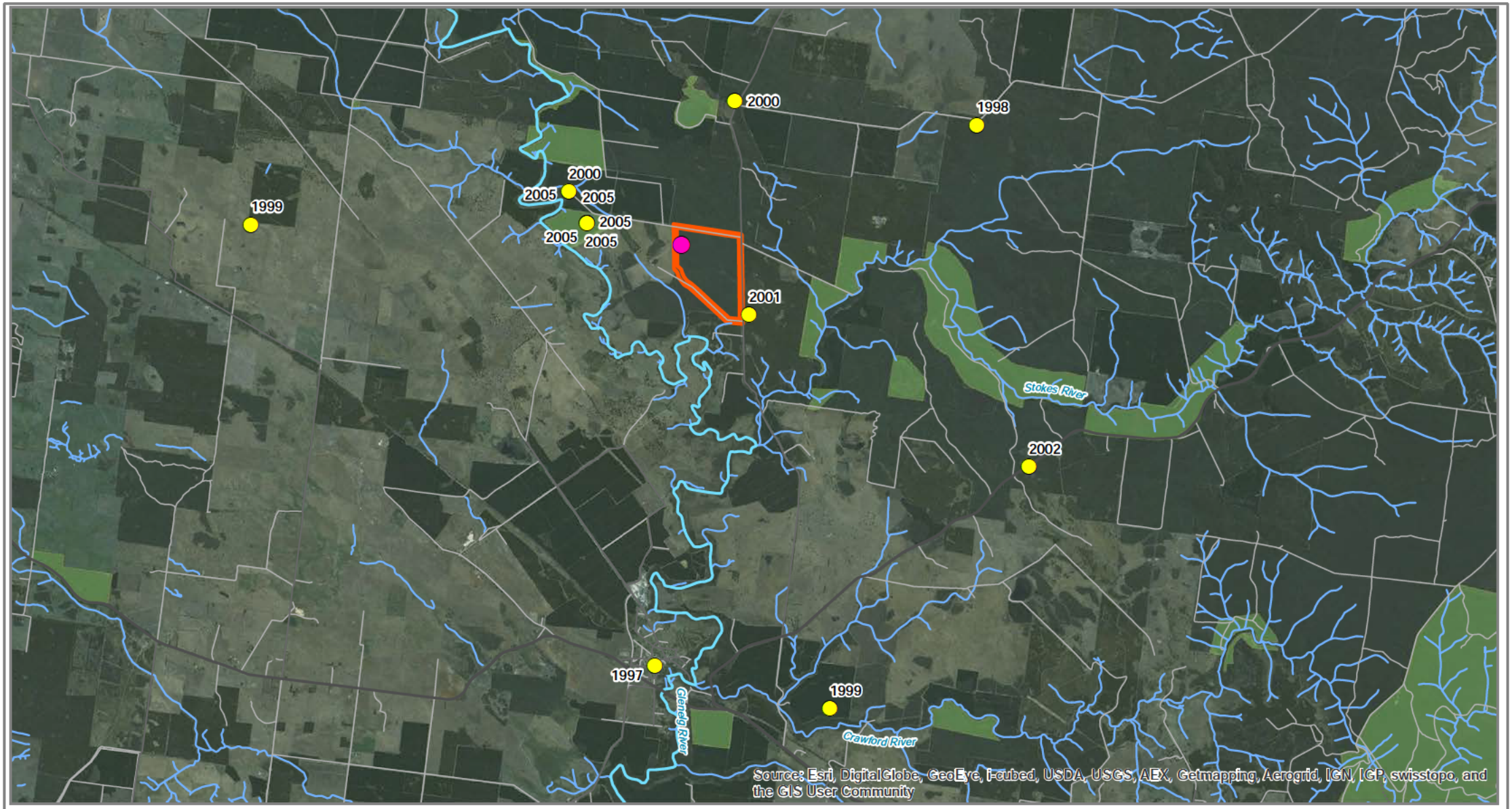


Figure 2

Local Records of SERTBC

Provision of expert advice regarding clearing of Red-tailed Black Cockatoo (South Eastern) habitat in Victoria

ecology & heritage partners

Legend

- Study Area
- SERTBC Sightings (VBA)
- SERTBC Record - Current Study
- Localities

Roads

- Freeway
- Major Road
- Collector Road
- Minor Road
- Proposed Road
- Walking Track

Watercourse

- Minor Watercourse
- Major Watercourse

Parks and Reserves

0 2.5 5

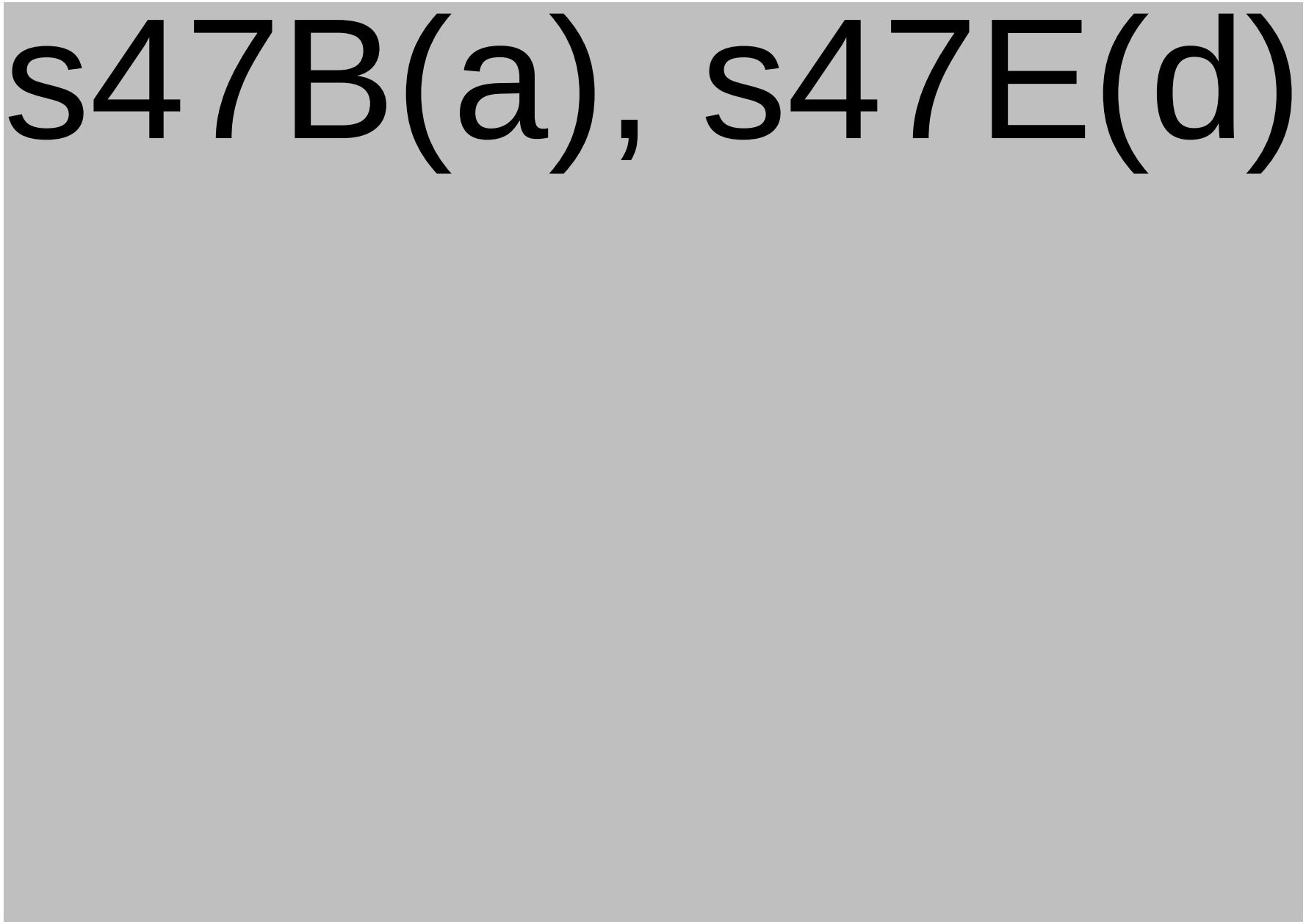
Kilometers

N

s47B(a), s47E(d)

APPENDICES

APPENDIX 1 - PHOTOGRAPHS


s47B(a), s47E(d)

s47B(a), s47E(d)

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