

## INVESTIGATION REPORT

# HIGH DENSITY RECORDING OF GREATER GLIDERS (*Petauroides volans*)

## TOAD TRACK – MOUNT JERSEY

VicForests' proposed logging coupe:  
846-501-0022

### Abstract

Forest areas within and/or adjacent to VicForests proposed logging coupe 846-501-0022 were investigated to assess the presence and density of Greater Glider (*Petauroides volans*) individuals and other nocturnal fauna.

High numbers of Greater Glider (*Petauroides volans*) individuals were recorded from this location within a nocturnal spotlighting survey.

The locations of the Greater Gliders (*Petauroides volans*) recorded within this investigation were assessed using Geographic Information Systems (GIS) software which demonstrated that the forest areas surveyed supported "high densities of Greater Glider" requiring protection under the relevant mandatory biodiversity conservation measures set out in the regulatory framework governing logging operations in Victoria's State Forests.

Recommendations are made to the Department of Environment, Land, Water and Planning (DELWP) and to VicForests to ensure that the areas of high Greater Glider (*Petauroides volans*) densities are protected from logging through their inclusion in the "Special Protection Zone" of the "Forest Management Zone Scheme". The methodology, results, discussion and recommendations arising from this investigation are further detailed within this report.

### Relevant Legislation

- Code of Practice for Timber Production 2014, Department of Environment and Primary Industries, The State of Victoria, 2014
- "Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014", Department of Environment and Primary Industries, The State of Victoria, 2014
- "Planning Standards for timber harvesting operations in Victoria's State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014", Department of Environment and Primary Industries, The State of Victoria, 2014
- Forest Management Plan For The East Gippsland Forest Management Area, Victoria Department of Conservation and Natural Resources, East Melbourne, December 1995

### Organisations involved

- VicForests

### Status of Site

Coupe 846-501-0022 is proposed for logging.

### Date of Investigation

18-19/01/2018

### Surveyors

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### Authors

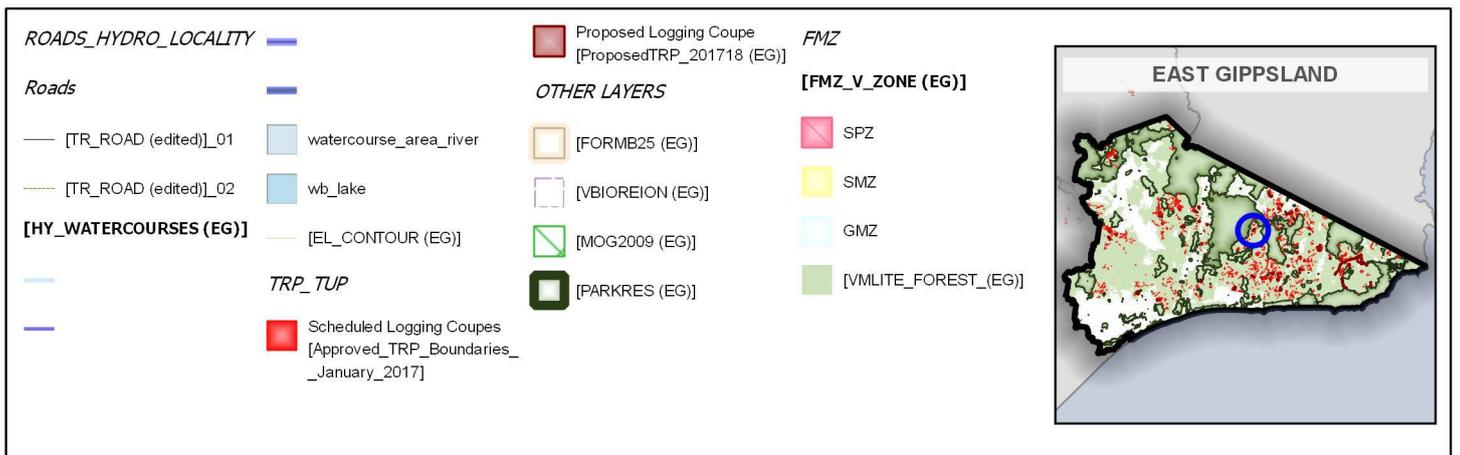
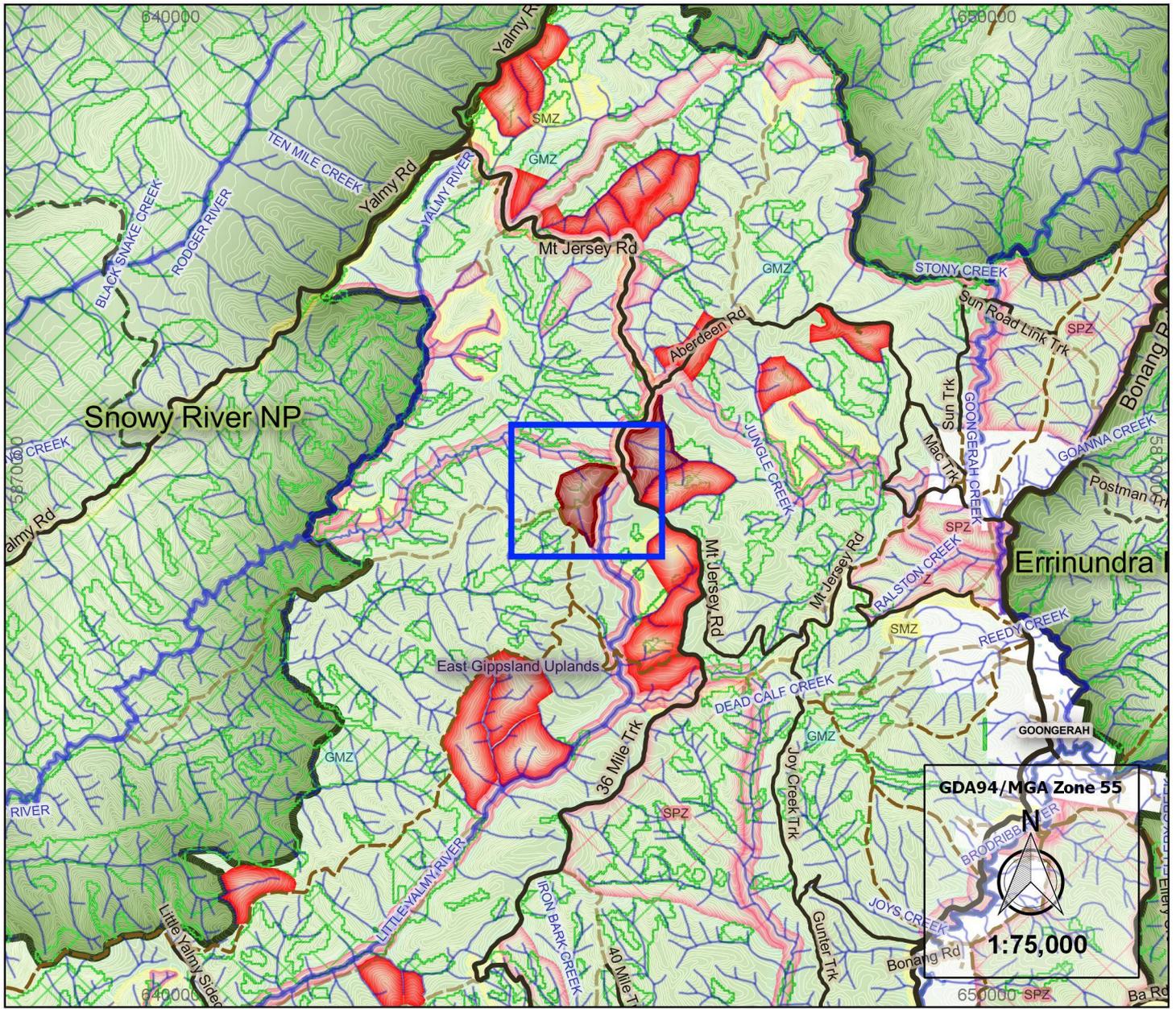
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### Date of report

16/03/2018

# Investigation Location Overview

Figure A. Investigation location: VicForests logging coupe 846-501-0022 along Toad Track off Mount Jersey Road Road in the Yalmy/Goongerah Forest Blocks of East Gippsland ("East Gippsland FMA") ~4km West of Goongerah.



## Method 1 (Nocturnal Fauna Spotlighting Survey)

### Nocturnal Fauna Survey [18-19/01/2018]

#### *Equipment Used*

- Hand-held Spotlight
- Binoculars
- Digital Video Camera
- Global Positioning System (GPS)  
[Garmin GPS]
- Compass, pen and paper

#### *Method - General*

1. On the 18<sup>th</sup> of January 2018 a spotlighting survey was commenced around the initial locations and times listed below in the Table of the Results 2. section off Toad Track in the Yalmy Forest Block.
2. Parts of the forest within and adjacent to logging coupe 846-501-0022 were searched for the presence of nocturnal fauna principally by shining a hand-held spotlight to detect fauna movement or “eye shine”.
3. As fauna were observed their locations were marked with a GPS and time, species, bearing from recording location, an estimate of the distance from observation location were noted and where possible video footage or photographs were taken.

(NB: where distance is recorded as "N/A" or 0, location coordinates of fauna species were recorded at or beneath the fauna location.)

**See the Tables in “Results 2” below for details of the fauna encountered.**

4. Fauna record location data were analysed using Geographic Information Systems (GIS) mapping software to determine compliance requirements with the regulatory framework governing logging operations in Victoria's State Forest with respect to fauna detection based biodiversity conservation measures.
5. Further presentation of these results, as well as conclusions and discussion arising from this investigations results are provided in their relevant sections below.

## Method 2 (analysis/recommendations/legislation considered [as at August 2015])

From: “Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”, Department of Environment and Primary Industries, The State of Victoria, 2014.<sup>1</sup>

### “2. Planning and Record Keeping

#### 2.1 FMZ and planning information

2.1.1.3 Where evidence of a value that requires protection via the establishment or amendment of an SPZ or SMZ is found in the field application must be made to the Secretary or delegate prior to commencement of the timber harvesting operation to create or amend an SPZ or SMZ in accordance with Appendix 5 the Planning Standards. SMZ applications must be accompanied by an SMZ plan and must be complied with during timber harvesting operations.

### 4. Biodiversity

#### 4.2 Fauna

4.2.1.1 Apply management actions for rare and threatened fauna identified within areas affected by timber harvesting operations as outlined in Appendix 3 Table 13 (Rare or threatened fauna prescriptions).

**Table 13 Rare or threatened fauna and invertebrate prescriptions.**

FMA	Common name	Scientific name	Management action
East Gippsland	Greater Glider	<i>Petauroides volans</i>	Where evidence of this value is found in the field follow clause 2.1.1.3 of this document using table 4 in Appendix 5 the Planning Standards for information.

From: “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”<sup>2</sup>

### “4. Biodiversity

#### 4.2 Fauna – fixed zoning

##### 4.2.1 Statewide

4.2.1.1 Plan management actions for rare and endangered fauna in accordance with Table 3 (Fixed FMZ rules for fauna) below.

4.2.1.2 Maintain FMZ schemes for rare and endangered fauna in accordance with Table 3 (Fixed FMZ rules for fauna) below.

#### 4.3 Fauna - detection based zoning

##### 4.3.1 Statewide

4.3.1.1 Apply the management actions outlined in Table 4 (Detection based FMZ rules for fauna) below for zoned rare or threatened fauna.

4.3.1.2 Implement FMZ amendments and reviews in accordance with Table 4 (Detection based FMZ rules for fauna) below for new verified rare or threatened fauna records and FMZ amendment requirements outlined in section 2.

**Table 4 Detection based FMZ rules for fauna.**

FMA	Common name	Scientific name	Zoning management actions	Management actions	Review
East Gippsland	Greater Glider	<i>Petauroides volans</i>	Establish a SPZ of approximately 100 ha of suitable habitat where verified records report more than 2 individuals per hectare, more than 10 individuals per km or more than 15 individuals per hour of spotlighting, or where substantial populations are located in isolated or unusual habitat.		

1 “Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”, Department of Environment and Primary Industries, The State of Victoria, 2014, p. 23, 32, 36, 76, 79

2 “Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014”, Department of Environment and Primary Industries, The State of Victoria, 2014, pp. 16, 17, 20, 43

From: "Forest Management Plan For The East Gippsland Forest Management Area, Victoria Department of Conservation and Natural Resources, East Melbourne, December 1995".<sup>3</sup>

## **"Chapter 3 BIODIVERSITY CONSERVATION**

### **3.4 - NATIVE FAUNA**

#### **CONSERVATION GUIDELINE Mammals**

Arboreal mammals. For each of the following occurrences, approximately 100 ha of suitable habitat will be included in the SPZ:

- resident Koala populations.
- Greater Glider and Common Brushtail Possum - >2 individuals per ha, >10 per km, or >15 per hour of spotlighting.
- Yellow-bellied Glider - >0.2 per ha, >5 per km, or >7 per hour of spotlighting.
- Eastern Pygmy Possum - >5 per standard pitfall line over 5 days.
- substantial populations of the above species that are isolated or in unusual habitat.



<sup>3</sup> Forest Management Plan For The East Gippsland Forest Management Area, Victoria Department of Conservation and Natural Resources, East Melbourne, December 1995, p. 12, 27, 29, 30

## Results 1 (Summary – Nocturnal Spotlighting Survey Results)

### Results 2 (Tables)

This section shows a Table that presents the summarised results from the spotlighting survey undertaken within the study location.

### Results 3 (Maps)

Following the table detailed above are two maps (Figures 1-2.) displaying the Greater Glider detection records detailed in Results 2. Also shown is the location of the “High Density of Greater Glider” configurations formed by the relevant Greater Glider records detailed below.

In Figure 1. 11 Greater Glider records are shown as the uniquely labelled "dark blue pentagons". These 11 Greater Glider records were present within a 5.42ha polygon area. In Figure 2. the 11 Greater Glider records are shown along a 819.73m line connecting the locations where each of the 11 Greater Gliders were recorded.

### Results 4 (Images)

Following the maps are a series of still images taken from video footage captured of each of the Greater Gliders listed in Table 1.

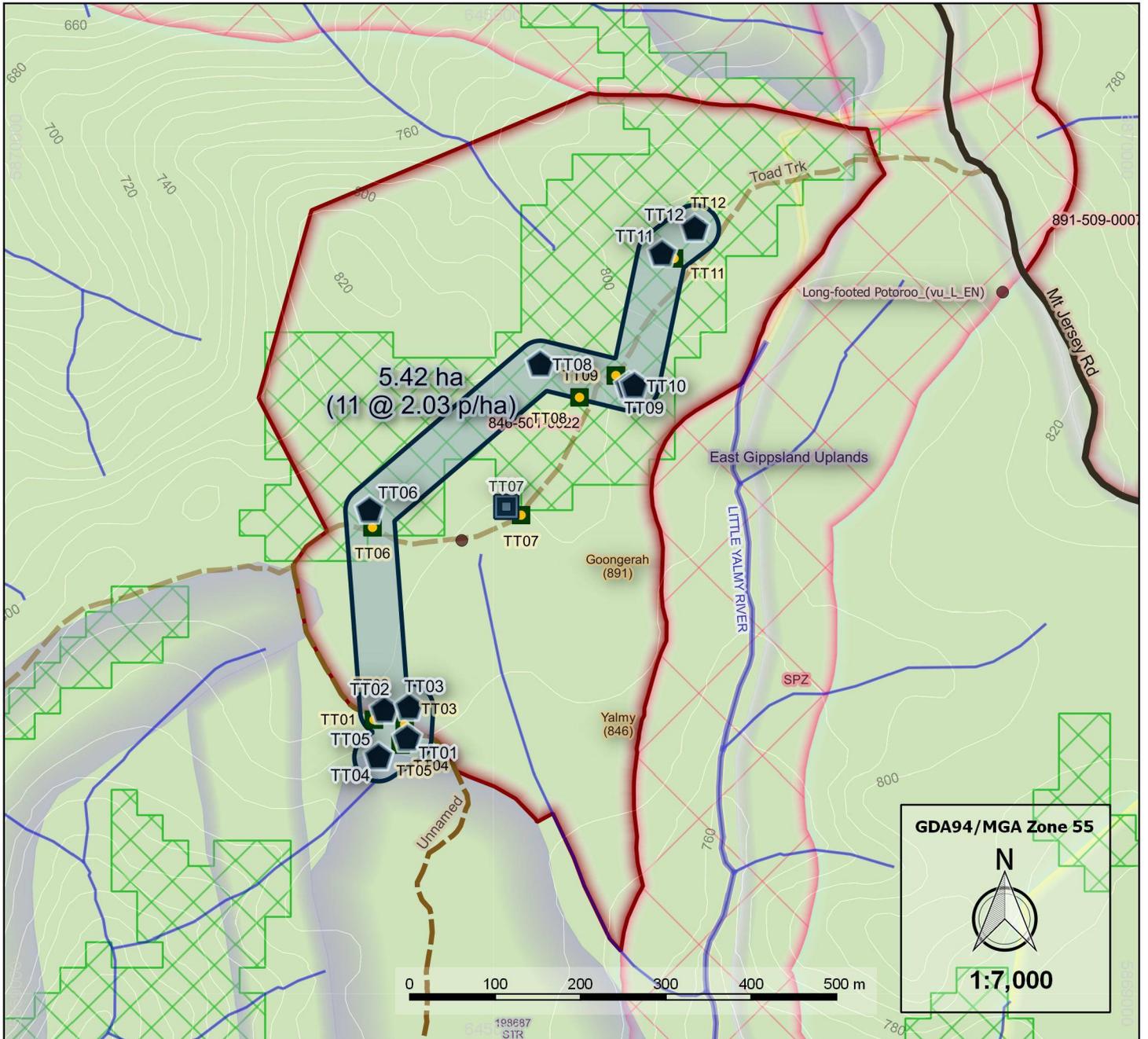
## Results 2 (Tables)

Table 1. 18-19 January 2018\_Nocturnal Fauna Spotlighting Records

Time	Way-point id.	Recording Location	Species	Common Name	Type	Bearing	Distance	Projected Animal Location	Video file id.	Unique Individuals (Cumulative GG Tally)
18/01 23:29	TT01	55 H 644860 5869323	<i>Petauroides volans</i>	Greater Glider	Visual	120°	45m	55H 644899 5869301	TT_vid_01	01
18/01 22:40	TT02	55 H 644872 5869334	<i>Petauroides volans</i>	Greater Glider	Visual	0°	0m	55H 644872 5869334	TT_vid_02	02
18/01 22:52	TT03	55 H 644896 5869318	<i>Petauroides volans</i>	Greater Glider	Visual	15°	20m	55H 644901 5869338	TT_vid_03	03
18/01 23:33	TT04	55 H 644891 5869294	<i>Petauroides volans</i>	Greater Glider	Visual	240°	30m	55H 644865 5869279	TT_vid_05	04
18/01 23:37	TT05	55 H 644891 5869294	<i>Petauroides volans</i>	Greater Glider	Visual	240°	30m	55H 644865 5869279	TT_vid_04	05
18/01 23:59	TT06	55 H 644858 5869551	<i>Petauroides volans</i>	Greater Glider	Visual	350°	20m	55H 644855 5869570	TT_vid_06	06
19/01 00:16	TT07	55 H 645032 5869565	<i>Trichosurus cunninghami</i>	Mountain Brushtail Possum	Visual	300°	20m	55H 645015 5869575		
19/01 00:30	TT08	55 H 645101 5869704	<i>Petauroides volans</i>	Greater Glider	Visual	310°	60m	55H 645055 5869742	TT_vid_07	07
19/01 00:43	TT09	55 H 645143 5869730	<i>Petauroides volans</i>	Greater Glider	Visual	130°	20m	55H 645159 5869717	TT_vid_08	08
19/01 00:45	TT10	55 H 645143 5869730	<i>Petauroides volans</i>	Greater Glider	Visual	120°	25m	55H 645165 5869717	TT_vid_08	09
19/01 01:10	TT11	55 H 645212 5869868	<i>Petauroides volans</i>	Greater Glider	Visual	290°	15m	55H 645197 5869873	TT_vid_09	10
19/01 01:20	TT12	55 H 645236 5869903	<i>Petauroides volans</i>	Greater Glider	Visual	0°	0m	55H 645236 5869903	TT_vid_10	11

# Results 3 (Maps)

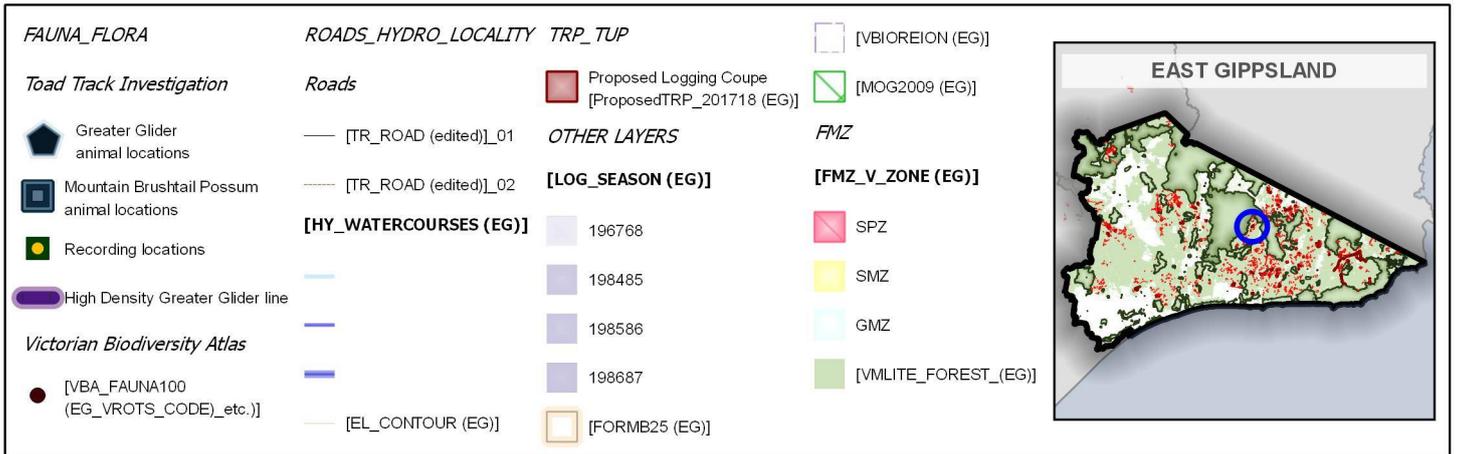
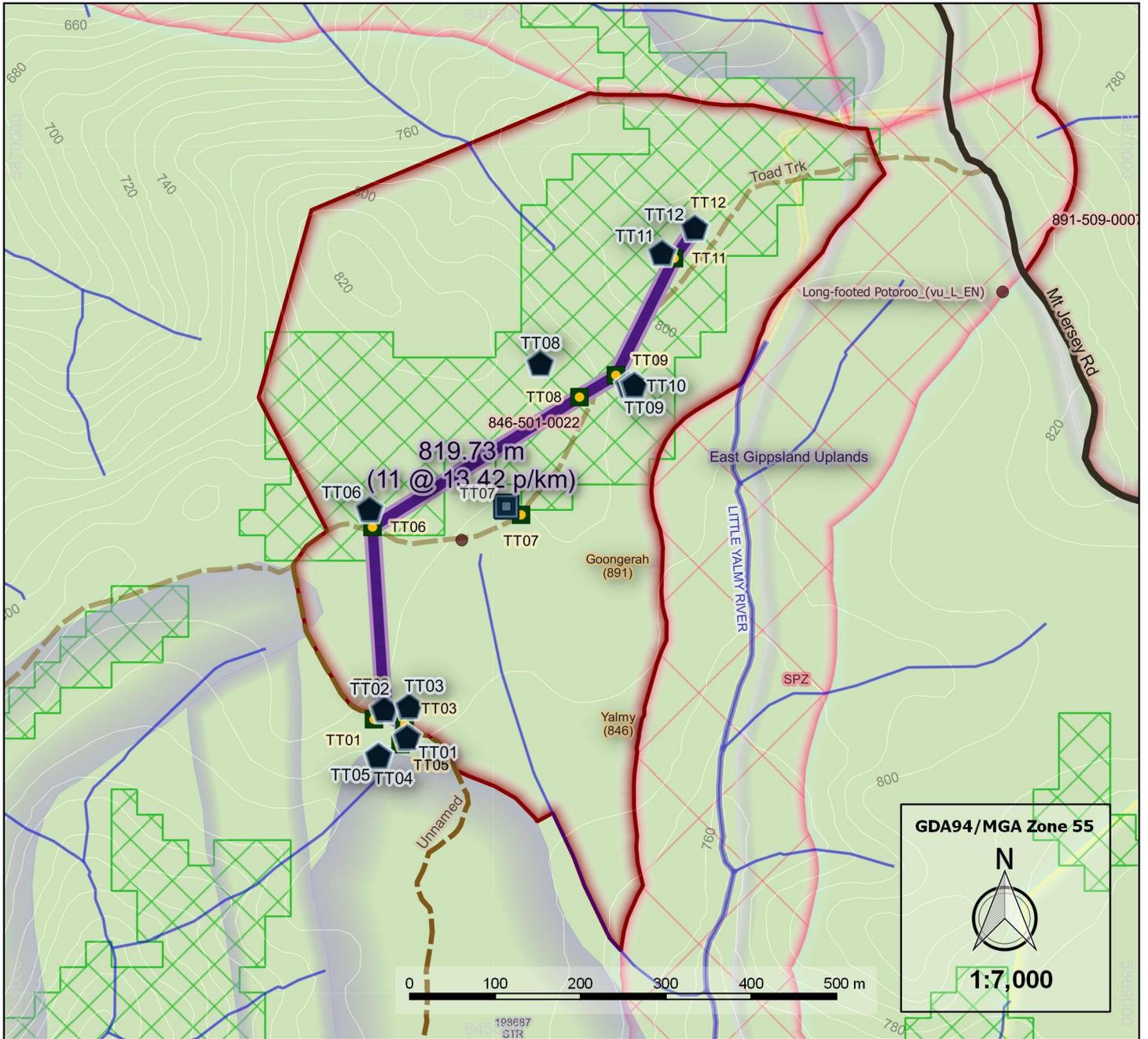
Figure 1. Toad Track\_>2 Greater Gliders p/ha



<b>FAUNA_FLORA</b>	<b>ROADS_HYDRO_LOCALITY TRP_TUP</b>	[VBIOREION (EG)]
<b>Toad Track Investigation</b>	<b>Roads</b>	[MOG2009 (EG)]
Greater Glider animal locations	[TR_ROAD (edited)]_01	<b>FMZ</b>
Mountain Brushtail Possum animal locations	[TR_ROAD (edited)]_02	[FMZ_V_ZONE (EG)]
Recording locations	[HY_WATERCOURSES (EG)]	SPZ
High Density Greater Glider area	196768	SMZ
<b>Victorian Biodiversity Atlas</b>	198485	GMZ
[VBA_FAUNA100 (EG_VROTS_CODE)_etc.]	198586	[VMLITE_FOREST_(EG)]
	198687	
	[EL_CONTOUR (EG)]	
	[FORMB25 (EG)]	

**EAST GIPPSLAND**

Figure 2. Toad Track\_>10 Greater Gliders p/km



## Results 4 (Images)

Figure 3(a). Still image of Greater Glider 01 [TT01 (TT\_vid\_01)]



Figure 3(b). Still image of Greater Glider 02 [TT02 (TT\_vid\_02)]



Figure 3(c). Still image of Greater Glider 03 [TT03 (TT vid 03)]



Figure 3(d). Still image of Greater Glider GG 04 [TT04 (TT vid 05)]



Figure 3(e). Still image of Greater Glider GG 05 [TT05 (TT vid 04)] (eyeshine shown only)



Figure 3(f). Still image of Greater Glider GG 06 [TT06 (TT vid 06)]



Figure 3(g). Still image of Greater Glider 07 [TT08 (TT vid 07)]



Figure 3(h). Still image of Greater Glider 08 [TT09 (TT vid 08)]



Figure 3(a). Still image of Greater Glider 09 [TT10 (TT vid 08)]



Figure 3(a). Still image of Greater Glider 10 [TT11 (TT vid 09)]



Figure 3(a). Still image of Greater Glider 11 [TT12 (TT vid 10)]



## Summary/Conclusions/Discussion

### Detection of Greater Gliders (*Petauroides volans*)

1. Within and adjacent to VicForests proposed logging coupe 846-501-0022 high numbers of Greater Gliders (*Petauroides volans*) were observed and recorded within a nocturnal fauna spotlighting survey on the evenings of 18-19/01/2018. These record locations are displayed in the Table and Maps of this report.
2. On 10 November 2016 the Victorian Flora and Fauna Guarantee Scientific Advisory Committee (SAC) received a nomination for listing as a threatened species for the Greater Glider (*Petauroides volans subsp. volans* Kerr 1792). A preliminary nomination supporting the listing of the Greater Glider was made on 21 November 2016 and on 16 March 2017 the SAC made its final nomination recommending the Greater Glider be listed as threatened.<sup>4</sup>
3. In the SAC's final nomination they noted that "Wood production practices are known to substantially deplete Greater Glider populations and gliders usually die if all or most of their home range is intensively logged or cleared (Menkhorst op. Cit.)".<sup>5</sup>
4. The SAC found that the Greater Glider satisfied their criteria for listing on the basis that:
  1. The Greater Glider is "in a demonstrable state of decline which is likely to result in extinction";
  2. The Greater Glider is "significantly prone to future threats which are likely to result in extinction", and;

4 Final Recommendation on a nomination for listing, *Petauroides volans subsp. volans* Kerr 1792 - Greater Glider (Nomination no. 879, Item no.: 11133), Flora and Fauna Guarantee Scientific Advisory Committee (SAC), March 2017, p. 1

5 *ibid.*, p. 3

3. The threat to the Greater Glider is “currently operating and is expected to operate at a level in the future which is likely to result in the extinction of the [greater glider]”<sup>6</sup>
5. The SAC note that:  
*“Timber harvesting in greater glider habitat has been proven to cause declines and/or local extinctions of greater glider populations (Lindenmayer et al. 2011, Kavanagh and Webb 1998, Lunney 1987, Dunning and Smith 1986, Tyndale-Biscoe and Smith 1969). Timber harvesting practices reduces the number of hollow bearing trees available for denning by tree removal or as a result of regeneration burns after the logging (Lindenmayer et al. 2011, 2002; Lunney 1987). In addition, the species does not cope well with habitat change (Kavanagh and Wheeler 2004, Tyndale-Biscoe and Smith 1969). Although all animals may not die from the initial impact they will die shortly afterwards. This is due to life history traits: affinity with home range, small home ranges, attachment to hollow bearing trees they use for denning and their specialist diet (Tyndale-Biscoe 2005).*
- In Victoria timber harvesting is widespread in the eastern and central parts of state. This is also the main distribution and habitat of the greater glider. Considering the known impacts of timber harvesting on gliders (Kavanagh and Webb 1998, Lunney 1987, Tyndale-Biscoe and Smith 1969, Dunning and Smith 1986), it is likely that other local extinctions of this species have already occurred and will continue to occur in the future.” ...*
- “Local extinctions from fire, timber harvesting, drought or predation across the range of the greater glider will lead to a loss of habitat connectivity. McCarthy and Lindenmayer (1999) and Possingham et al (1994) found small patch sizes (McCarthy and Lindenmayer: less than 500 ha; Possingham et al. less than 1000 ha) of habitat are unviable for the greater gliders long-term viability. Lindenmayer and Taylor (2003) found evidence of genetic erosion in the species after 5-6 generations in small forest patches (approximately 20ha) near Tumut in southern New South Wales.”<sup>7</sup>*
6. The SAC also highlight that “Greater Gliders have recently been classified as ‘Vulnerable’ under the Environment Protection and Biodiversity Conservation Act 1999 (Department of Environment and Energy 2016)”<sup>8</sup>
7. On 08 June 2017 in General Government Gazette “GG2017G023” Lily D’Ambrosio, Minister for Energy, Environment and Climate Change, and Jaala Pulford, Minister for Agriculture “decided to recommend to the Governor in Council that the [Greater Glider] be added to the Threatened List for the reasons that [the Greater Glider] ... is in a demonstrable state of decline which is likely to result in extinction[, the Greater Glider] is significantly prone to future threats which are likely to result in extinction [and] the threat is currently operating and is expected to operate at a level in the future which is likely to result in the extinction of the taxon.”<sup>9</sup>
8. On 14 June 2017 the Greater Glider was added to the “Threatened List” under the Flora and Fauna Guarantee Act, and notice was given of this on 15 June 2017 in the Victorian Government Gazette no. G24.<sup>10</sup>

6 *ibid.*, p. 1-2

7 *ibid.*, p. 3

8 *ibid.*, p. 3

9 Victoria Government Gazette, By Authority of Victorian Government Printer, GENERAL No. G 23 Thursday 8 June 2017, <http://www.gazette.vic.gov.au/gazette/Gazettes2017/GG2017G023.pdf> (accessed 08/06/2017)

10 Victoria Government Gazette, By Authority of Victorian Government Printer, GENERAL No. G 24 Thursday 15 June 2017, <http://www.gazette.vic.gov.au/gazette/Gazettes2017/GG2017G024.pdf> (accessed 23/06/2017)

9. **Given the presence of Greater Gliders within and/or adjacent to coupe 846-501-0022 as detailed in this report, the Department of Environment, Land, Water and Planning should restrain and VicForests should refrain from scheduling and logging this coupe including to comply with the precautionary principle as required by the Code of Practice for Timber Production 2014.**

#### High-density of Greater Gliders (*Petauroides volans*)

10. Both the “*Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014*” (Department of Environment and Primary Industries, The State of Victoria, 2014) through its “*Planning Standards for timber harvesting operations in Victoria’s State forests 2014, Appendix 5 to the Management Standards and Procedures for timber harvesting operations in Victoria’s State forests 2014*” and the Forest Management Plan For The East Gippsland Forest Management Area (Victorian Department of Conservation and Natural Resources, East Melbourne, December 1995) require that an SPZ (Special Protection Zone) of approximately 100ha of suitable habitat be established for records of > 2 individual Greater Gliders per hectare and > 10 individual Greater Gliders per kilometer.
11. The 11 uniquely labelled "large white outlined dark blue pentagon" Greater Glider records shown in the map of Results 3. Figure 1. and falling within the corresponding 5.42 hectare “dark blue solid outlined and light grey filled” polygon recorded these 11 Greater Glider individuals present at densities of 2.03 Greater Gliders per/ha.
12. The 11 uniquely labelled "large white outlined dark blue pentagon" Greater Glider records shown in the map of Results 3. Figure 2. along the 819.73 metre "purple and white outlined" line shows the presence of 11 Greater Glider individuals at a density of 13.42 Greater Gliders per/km.
13. Each of the two configurations of 11 Greater Gliders described above constitute a "High-density of Greater Gliders" according to the density and frequency triggers contained within the relevant sections of the regulatory framework described above.
14. In order to meet the requirements of the High Density of Greater Glider prescriptions contained within the regulatory framework governing logging operations in Victoria's State Forests, Special Protection Zones to protect these Greater Glider configurations must be established and fully implemented prior to any logging operations in this area.
15. **VicForests must refrain from and the Department of Environment, Land, Water and Planning must restrain VicForests from scheduling and logging within any of the forest areas proposed for logging within coupe 846-501-0022.**