

INVESTIGATION REPORT

HIGH DENSITY RECORDING OF YELLOW-BELLIED GLIDERS (*Petaurus australis*) METAL LINK TRACK – KUARK

VicForests Logging coupe 830-512-0011

Abstract

Forest areas within and/or adjacent to VicForests scheduled logging coupe 830-512-0011 were investigated to assess the presence and density of Yellow-bellied Glider (*Petaurus australis*) individuals and other nocturnal fauna.

Spatial analysis of the Yellow-bellied Glider records obtained within this investigation were assessed using Geographic Information System software and were found to exist at "high densities" 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 area of high Yellow-bellied Glider density is protected from logging through its 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

Relevant Organisations

- VicForests

Status of Site

Coupe 830-512-0011 is scheduled for logging

Date of Investigation

14-15/02/2016

Surveyors

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Date of report

30/05/2016

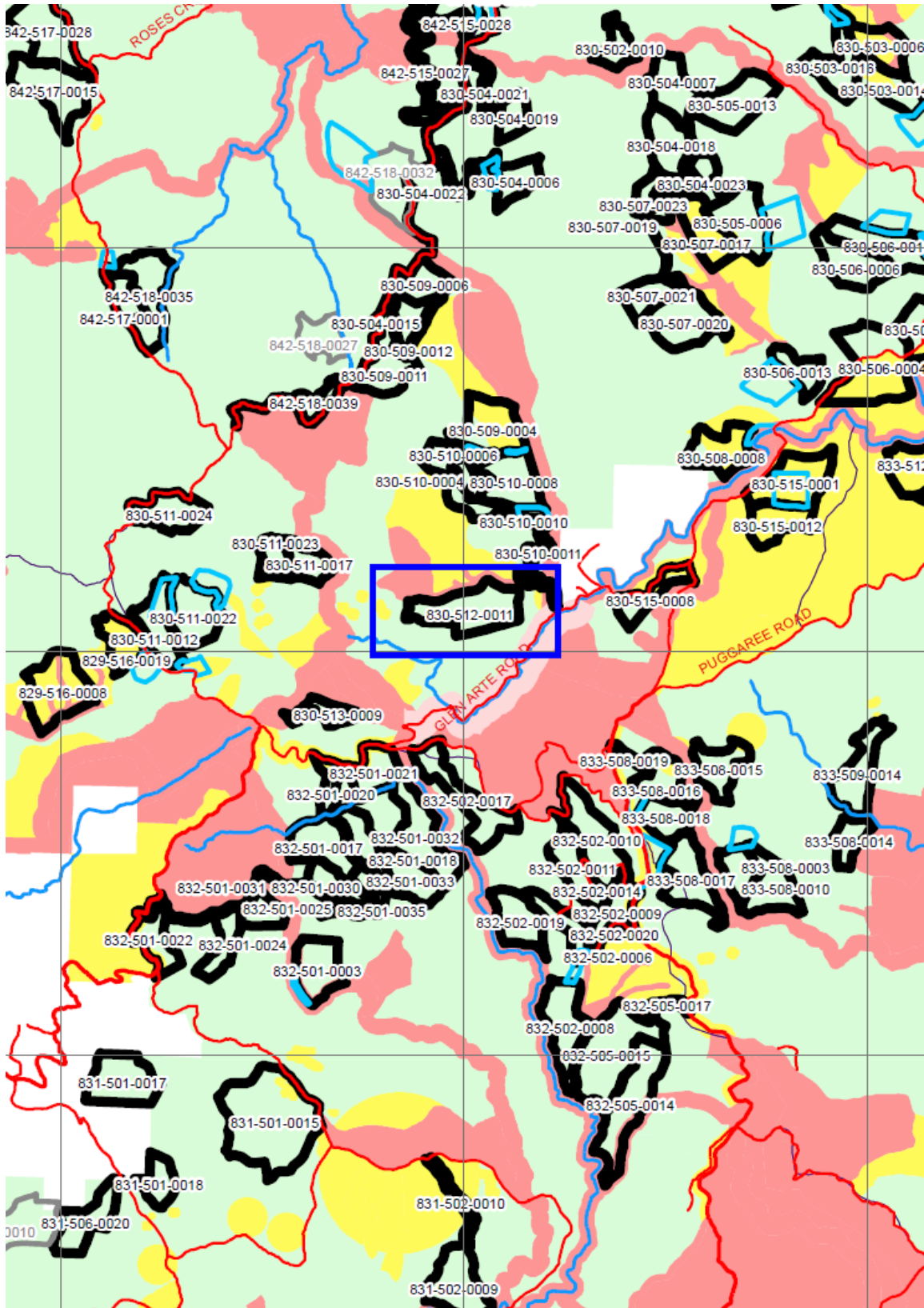
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Study Location Overview

Within VicForests scheduled logging coupe 830-512-0011 along Metal Link Track in the Kuark Forest Block of East Gippsland.

Figure A(i). Detail from: "Approved Timber Release Plan Map – 2013-2016 Change Map; April 2015 (with all approved amendments applied) Orbost (East)", VicForests, 16 April 2015



*Investigation location within blue box

Method 1 (Nocturnal Fauna Spotlighting Survey)

Nocturnal Fauna Survey [14-15/02/2016]

Equipment Used

- Hand-held Spotlight
- Binoculars
- Digital Camera
- Global Positioning System (GPS) [Garmin GPSMAP 62s]
- Compass, pen and paper
- Hand-held megaphone
- MP3 Player

Method used

1. On 14 February 2016 (concluding 15/02/2016), at around 10:00pm surveyors commenced a spotlighting and call-play-back survey heading westerly along Metal Link Track in the Kuark Forest Block of East Gippsland at approximately 55 H 655662 5840554 (GDA94/UTM).
2. The survey was commenced by broadcasting a pre-recorded Powerful Owl vocalisation using a hand-held megaphone from an MP3 player for approximately 2 minutes followed by a short listening for nocturnal fauna aural response. This process was repeated at two additional times during the survey.
3. As the survey transect was traversed surveyors listened for arboreal mammal vocalisations and movements.
4. In addition, the forest adjacent to (visible from) Metal Link Track was searched for the presence of nocturnal fauna principally by shinning a hand-held spotlight to detect fauna movement or “eye shine”.
5. As fauna were observed recording locations were marked with the GPS and time, species, bearing from and an estimate of the distance from observation location were noted.
6. The results of this survey, including details of the survey undertaken and the species encountered, are presented in “Results 1. Table 1. Nocturnal Fauna Spotlighting Survey Results Summary; 14-15/02/2016” below (to be read in conjunction with the map in Results 3. Figure 2.)
7. 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.
8. Further presentation of these results, as well as conclusions and discussion arising from this investigations results are provided in their respective sections below.

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, 2014.¹

“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	Yellow-bellied Glider	<i>Petaurus australis</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”²

“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	Yellow-bellied Glider	<i>Petaurus australis</i>	Establish a SPZ of approximately 100 ha of suitable habitat where verified records report more than 0.2 individuals per hectare, more than 5 individuals per km or more than 7 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, 47

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

"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. "



³ 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. (Nocturnal Fauna Spotlighting Survey Results Summary)

Table 1. Nocturnal Fauna Spotlighting Survey Results Summary; 14-15/02/2016

ID	Time	Waypoint	Recording Location	Species	Common Name	Type	Bearing	Distance	Animal Location (projected)	p_WP_ID	Minimum unique individuals (cumulative tally)
1	22:08				Pow erful Owl Call Playback						
2	22:17	MLSL01	55 H 655541 5840525	<i>Trichosurus cunninghami</i>	Mountain Brush-tail Possum	Visual	320°	20m	55H 655528 5840540	1_01	
3	22:28	MLSL02	55 H 655437 5840436	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	240°	80m	55H 655367 5840397	2_01	
4	22:28	MLSL02	55 H 655437 5840436	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	190°	100m	55H 655417 5840338	2_02	
5	22:29	MLSL02	55 H 655437 5840436	<i>Petaurus breviceps</i>	Sugar Glider	Aural	70°	150m	55H 655626 5840501	2_03	
6	22:48	MLSL03	55 H 655359 5840366	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	300°	200m	55H 655188 5840470	3_01	
7	23:00	MLSL03	55 H 655359 5840366	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	270°	200m	55H 655158 5840370	3_02	1
8	23:00	MLSL03	55 H 655359 5840366	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	170°	150m	55H 655383 5840218	3_03	2
9	23:00	MLSL03	55 H 655359 5840366	<i>Petaurus australis</i>	Yellow -bellied Glider	Visual	250°	20m	55H 655340 5840360	3_04	3
10	23:00	MLSL03	55 H 655359 5840366	<i>Petaurus australis</i>	Yellow -bellied Glider	Visual	0°	10m	55H 655359 5840376	3_05	4
11	23:11	MLSL04	55 H 655218 5840333	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	350°	150m	55H 655196 5840481	4_01	
12	23:11	MLSL04	55 H 655218 5840333	<i>Petaurus australis</i>	Yellow -bellied Glider	Visual	20°	10m	55H 655221 5840343	4_02	5
13	23:14	MLSL04	55 H 655218 5840333	<i>Trichosurus cunninghami</i>	Mountain Brush-tail Possum	Visual	200°	30m	55H 655207 5840306	4_03	
14	23:31				Pow erful Owl Call Playback						
15	23:33	MLSL05	55 H 654832 5840359	<i>Petaurus breviceps</i>	Sugar Glider	Aural	220°	150m	55H 654732 5840247	5_01	
16	23:34	MLSL05	55 H 654832 5840359	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	40°	250m	55H 654996 5840547	5_02	6
17	23:41	MLSL05	55 H 654832 5840359	<i>Aegotheles cristatus</i>	Australian Owl et-nightjar	Aural	10°	100m	55H 654851 5840457	5_03	
18	23:54	MLSL06	55 H 654650 5840374	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	230°	100m	55H 654573 5840311	6_01	7
19	23:56	MLSL06	55 H 654650 5840374	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	250°	200m	55H 654461 5840310	6_02	8
20	00:12	MLSL07	55 H 654569 5840368	<i>Pseudocheirus peregrinus</i>	Common Ring-tail Possum	Visual	240°	10m	55H 654561 5840363	7_01	
21	00:12	MLSL07	55 H 654569 5840368	<i>Petaurus breviceps</i>	Sugar Glider	Visual	0°	20m	55H 654570 5840388	7_02	
22	00:14	MLSL08	55 H 654541 5840368	<i>Petaurus australis</i>	Yellow -bellied Glider	Visual	230°	10m	55H 654533 5840361	8_01	
23	00:25	MLSL09	55 H 654298 5840403	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	230°	30m	55H 654274 5840384	9_01	9
24	00:28				Pow erful Owl Call Playback						
25	00:30	MLSL09	55 H 654298 5840403	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	110°	150m	55H 654438 5840348	9_03	
26	01:13	MLSL10	55 H 655662 5840554	<i>Petaurus australis</i>	Yellow -bellied Glider	Aural	250°	40m	55H 655624 5840541	010_01	(10)

Results 2 – Yellow-bellied Glider (Petaurus australis) Photos; Figures 1(a-d).

Figure 1(a). Yellow-bellied Glider [p_WP_ID /Projected Animal Location: MSL03_04; 55H 655340 5840360]



Figure 1(b). Yellow-bellied Glider [p_WP_ID /Projected Animal Location: MSL03_04; 55H 655359 5840376]



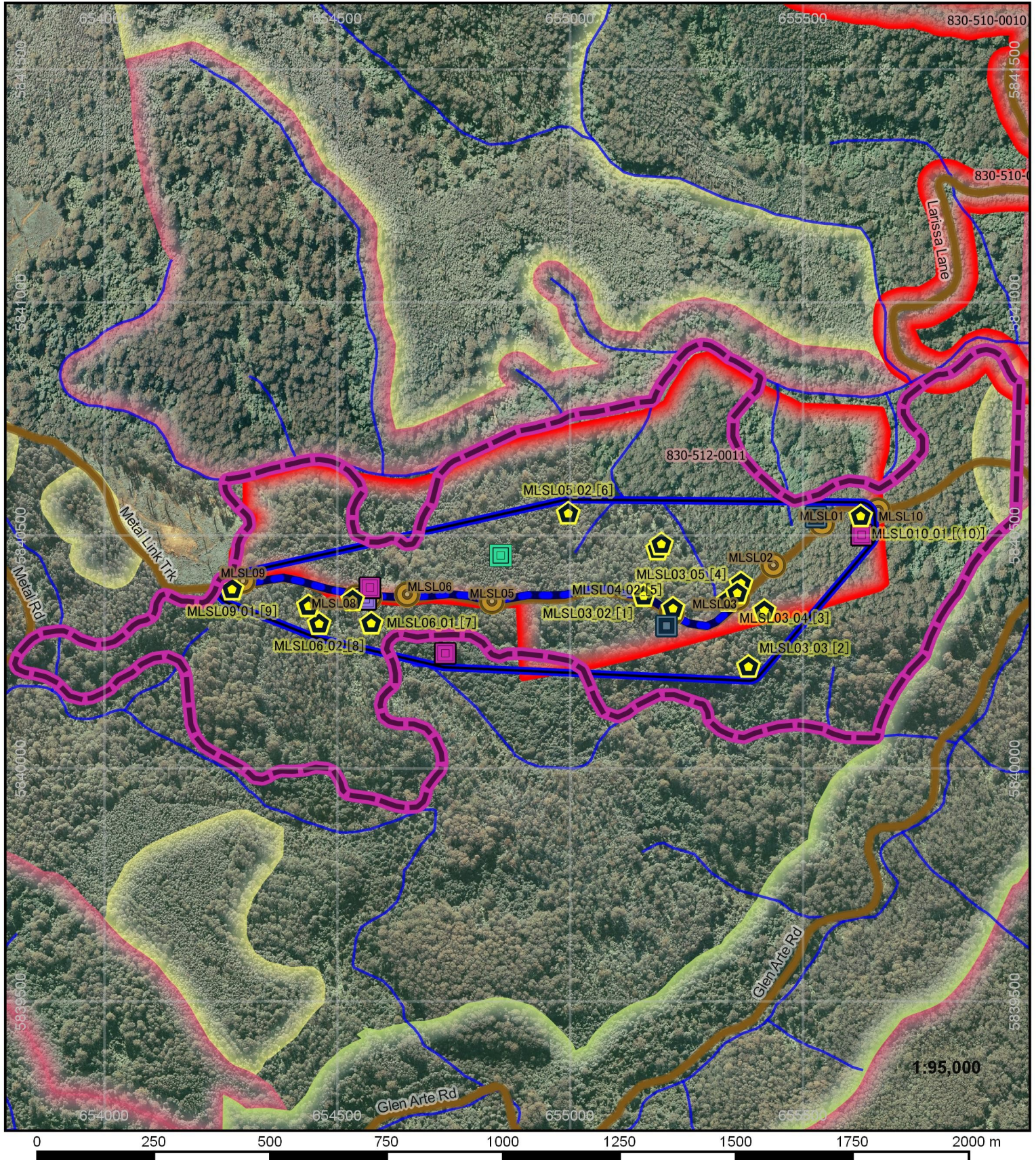
Figure 1(c). Yellow-bellied Glider [p_WP_ID /Projected Animal Location: MSL04_02; 55H 655221 5840343]



Figure 1(d). Yellow-bellied Glider [p_WP_ID /Projected Animal Location: MSL08_01; 55H 654533 5840361]












Results 3. Figure 2. Nocturnal Fauna detections; High Density detections of Yellow-bellied Gliders; Recommended Management Zones








Legend

Fauna Species encountered

-  Yellow-bellied Glider
-  Australian Owlet Nightjar
-  Mountain Brushtail Possum
-  Common Ringtail Possum
-  Sugar Glider

-  Recording Location
-  High Density of Yellow-bellied Glider transect [9 YBG's in 1.11km @ 8.11 YBG's p/km]
-  High Density of Yellow-bellied Glider area [9 YBG's in 38.99ha @ 0.28 YBG's p/ha]
-  100ha recommended SPZ
-  Scheduled Logging Coupes [Approved_TRP_August_2015]

- Forest Management Zones [DEPI; June: 2014; FMZ100]
-  Conservation Parks and Reserves
 -  Special Protection Zone
 -  Special Management Zone
 -  General Management Zone
 -  Roads
 -  Watercourses

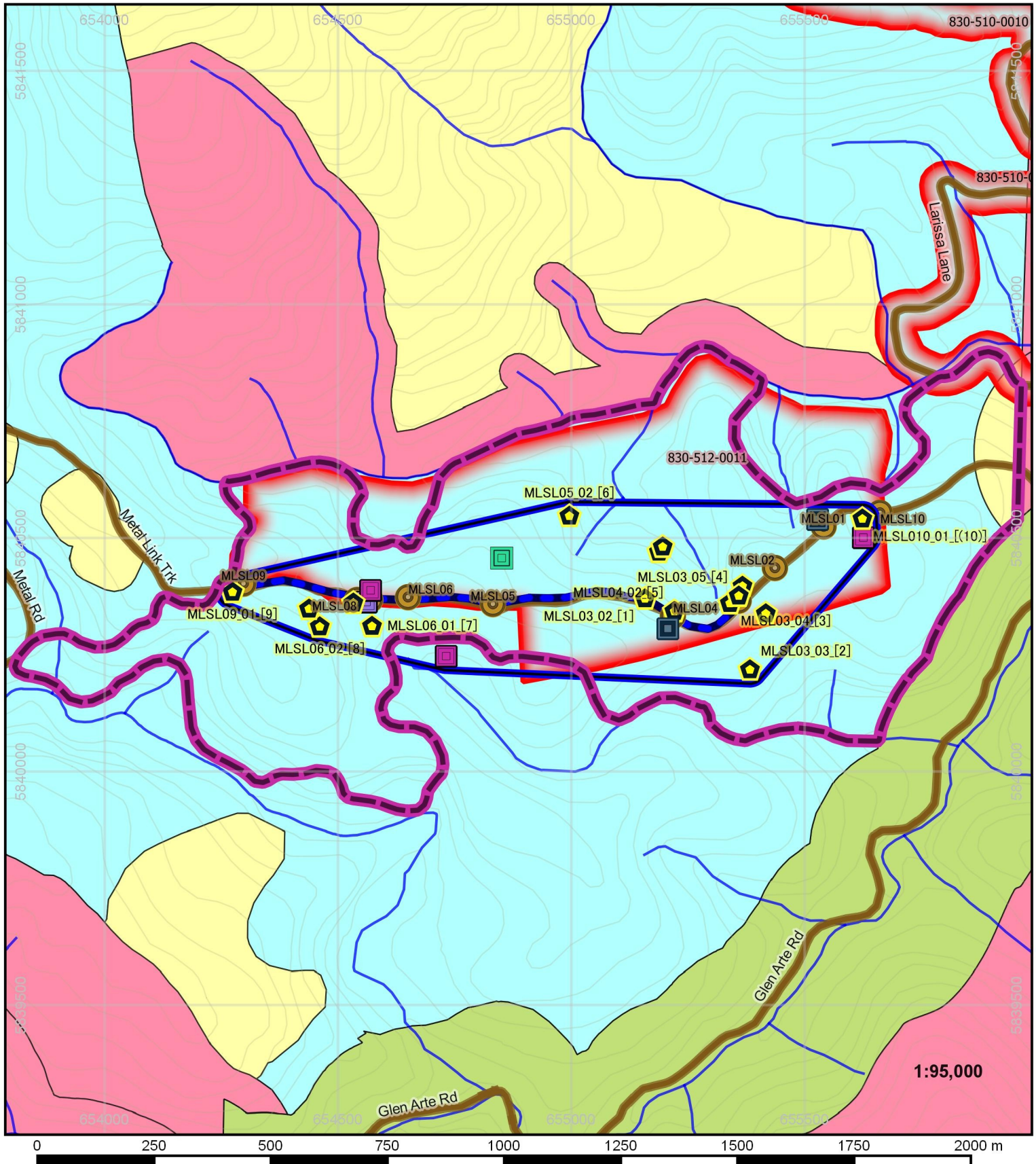
Projection: EPSG: 28355
GDA94/MGA Zone 55

Map Scale:
1:11,000



25 May 2016

Results 3. Figure 3. Nocturnal Fauna detections; High Density detections of Yellow-bellied Gliders; Recommended Management Zones



1:95,000

0 250 500 750 1000 1250 1500 1750 2000 m

Legend		Forest Management Zones [DEPI; June: 2014; FMZ100]	
Fauna Species encountered	Recording Location	Conservation Parks and Reserves	Special Protection Zone
Yellow-bellied Glider	High Density of Yellow-bellied Glider transect [9 YBG's in 1.11km @ 8.11 YBG's p/km]	Conservation Parks and Reserves	Special Protection Zone
Australian Owlet Nightjar	High Density of Yellow-bellied Glider area [9 YBG's in 38.99ha @ 0.28 YBG's p/ha]	Special Management Zone	General Management Zone
Mountain Brushtail Possum	100ha recommended SPZ	Roads	Watercourses
Common Ringtail Possum	Scheduled Logging Coupes [Approved_TRP_August_2015]	Contours	
Sugar Glider			

Projection: EPSG: 28355
GDA94/MGA Zone 55

Map Scale:
1:11,000

25 May 2016

Summary/Conclusions/Discussion

High-density of Yellow-bellied Gliders (*Petaurus australis*)

1. Within and adjacent to VicForests scheduled logging coupe 830-512-0011 16 Yellow-bellied Glider (*Petaurus australis*) observations were made within the nocturnal fauna call-play-back and spotlighting survey transect on the 14-15/05/2015. These record locations are displayed in Results 3. Figure 2. as the “yellow and black pentagon” points.
2. At least 9 unique Yellow-bellied Glider detections were identified from a combination of (a): differentiation of individuals encountered during the survey; as well as (b): through post-survey differentiation using GPS waypoint data recorded on site in conjunction with the estimated projected location of each individual animal based on estimates of each glider's distance and bearing from the surveyors as well as time of observation considerations. This information is detailed in Results 1. Table 1. within the column "Minimum unique individuals (cumulative tally)".

NOTE: Results 1. Table 1. Shows that 16 records of Yellow-bellied Gliders were made throughout the survey. Records from rows 3, 4, 6, 11, 22, 25 and 26 were not included in the analysis of Yellow-bellied Glider density calculations. Records from row 3, 4 and 6 made towards the start of the survey were discounted as surveyors recommenced recording individuals from row 7 in order to avoid confusion in accounting for unique individuals following rapid succession of Yellow-bellied Glider presence detected both aurally and visually during the survey. Records from rows 11, 22 and 25 were recorded without following the process described above but due to their estimated projected locations were not included in the analysis to avoid any potential for duplicate records (the same could also be said retrospectively for record 6). The record from row 26 was made discontinuously with the trajectory of the main survey transect and approximately 2 hours following the closest Yellow-bellied Glider record from that location. Given the distance between these records it is possible that the Yellow-bellied Glider from row 26 is a unique individual but for simplicity it has nonetheless not been included in the calculations considering Yellow-bellied Glider density.

3. 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, Victoria 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 > 0.2 individual [Yellow-bellied Gliders] per hectare, > 5 individuals per km or > 7 per hour of spotlighting.
4. The at least 9 Yellow-bellied Glider individual records detailed above were made in close proximity to each other and were recorded within the 38.99 ha area shown in Results 3. Figure 2. as the “blue and black solid outlined” polygon at a density of 0.28 Yellow-bellied Gliders per hectare.
5. The at least 9 Yellow-bellied Glider individual records detailed above were made in close proximity to each other and were recorded within the 1.11 km transect shown in Results 3. Figure 2. as the “blue and dark blue dashed” line at a rate of 8.11 Yellow-bellied Gliders per kilometre.
6. The first at least 8 unique Yellow-bellied Glider individual records detailed above were made within relatively short succession and were recorded within the 1 hour time period as shown in Results 1. Table 1. at a rate of 8.11 Yellow-bellied Gliders per kilometre.

7. Results 3. Figure 2. shows the recommended Special Protection Zone (SPZ) of approximately 100ha of suitable habitat that can be transferred into SPZ in closest proximity to the high density of Yellow-bellied Glider area identified within this report (the “pink and dashed dark pink outlined” polygon). This SPZ design takes into account the closest and most suitable forest types required for the species habitat requirements, the distribution of prior logging operations in the nearby area and the investigation locations topographic configurations and infrastructural features.
8. In order to meet the requirements of the High Density of Yellow-bellied Glider prescriptions contained within the regulatory framework governing logging operations in Victoria's State Forests the Special Protection Zone shown in Results 3. Figure 2. (and Figure 3.) must be fully implemented prior to any further logging planning or operations within this area.
9. **VicForests must refrain from and The Department of Environment, Land, Water and Planning must restrain VicForests from logging within the 100ha SPZ displayed in Results 3. Figure 2. and ensure that this area is protected from the effects of logging including “regeneration” burns.**

