

IN THE SUPREME COURT OF VICTORIA  
AT MELBOURNE  
COMMON LAW DIVISION  
VALUATION, COMPENSATION AND PLANNING LIST

S CI 2020 00373

BETWEEN

**WOTCH INC**

Plaintiff

and

**VICFORESTS**

Defendant

**EXPERT REPORT OF DR ANDREW SMITH  
AND LETTER OF INSTRUCTION**

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Date of document:	31 July 2020	
Filed on behalf of:	Plaintiff	
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Contents:

- A. Expert Report of Dr Andrew Smith dated 30 July 2020
- B. Letter from Environmental Justice Australia to Dr Andrew Smith dated 22 July 2020 with enclosures:
  1. Expert Witness Code of Conduct.
  2. (a) Statement of Claim; (b) Defence; (c) Reply;
  3. (a) Timber Release Plan – December 2019; (b) Timber Release Plan – July 2020;  
(c) Timber Release Plan extract for subject Coupes;
  4. Fauna and Flora Guarantee Scientific Advisory Committee Final recommendation on a nomination for listing *Petauroides volans* Greater Glider, 16 March 2017;
  5. Greater Glider Action Statement Nov 2019;
  6. Conservation Advice *Petauroides volans* greater glider, Threatened Species Scientific Committee, 25 May 2016;

7. DELWP preliminary report titled “Victoria’s bushfire emergency: Biodiversity response and recovery preliminary report — Version 1”.
8. Commonwealth Department of Agriculture, Water and the Environment Technical Report: (a) Rapid analysis of the impacts of the bushfires on animal species and prioritisation of species for management response, prepared for the Wildlife and Threatened Species Bushfire Recovery Expert Panel dated 14 March 2020; and (b) Wildlife and Threatened Species Bushfire Recovery Expert Panel Provisional list of species requiring urgent management intervention dated 20 March 2020;
9. Ward, M., et al, ‘Impact of 2019–2020 mega-fires on Australian fauna habitat’, *Nature Ecology and Evolution*, 20 July 2020
10. The:
  - (a) First Affidavit of Mr McKenzie dated 7 February 2020 (**First McKenzie Affidavit**) with exhibits JRM-3, JRM-6, JRM-9, JRM-12, JRM-15, JRM-17 to JRM-24;
  - (b) Second Affidavit of Mr McKenzie dated 14 February 2020 (**Second McKenzie Affidavit**) with exhibits JRM-26, JRM-28, JRM-30, JRM-36 to JRM-41;
  - (c) Third Affidavit of Mr McKenzie dated 6 July 2020 (**Third McKenzie Affidavit**) with exhibits JRM-42, JRM-46, JRM-51, JRM-62, JRM-64, JRM-69 to JRM-75;
  - (d) Fourth Affidavit of Mr McKenzie dated 18 July 2020 (**Fourth McKenzie Affidavit**) with exhibits JRM-76, JRM-77, JRM-80, JRM-85, JRM-92, JRM-110 to JRM-116, JRM-118, JRM-121 to JRM-125;
  - (e) First Affidavit of Mr Nisbet dated 6 July 2020 (**First Nisbet Affidavit**) with exhibits BTN-1, BTN-10, BTN-14, BTN-16, BTN-18A, BTN-21, BTN-25, BTN-28, BTN-29, BTN-30, BTN-32, BTN-33, BTN-34, BTN-36 to BTN-43;
  - (f) Third Affidavit of Mr Nisbet dated 17 July 2020 (**Third Nisbet Affidavit**) with exhibits BTN-50, BTN-53, BTN-56, BTN-59, BTN-68, BTN-70, BTN-76, BTN-78A, BTN-95, BTN-96;

- (g) First Affidavit of Mr Marshall dated 6 July 2020 (**First Marshall Affidavit**) with exhibits PTM-3, PTM-6, PTM-8, PTM-12, PTM-15, PTM-20, PTM-21A, PTM-23, PTM-26, PTM-28;
  - (h) Second Affidavit of Mr Marshall dated 20 July 2020 (**Second Marshall Affidavit**) with exhibits PTM-32, PTM-34 to PTM-37, PTM-39, PTM-42;
  - (i) First Affidavit of Ms Forster dated 7 February 2020 (**First Forster Affidavit**) with exhibits HSF-3, HSF-7 to HSF-11;
  - (j) Fifth Affidavit of Ms Forster dated 19 July 2020 (**Fifth Forster Affidavit**) with exhibit HSF-53;
  - (k) First Affidavit of Ms Jacobs dated 28 January 2020 (**Fifth Jacobs Affidavit**) with exhibits DJ-55, DJ-67.
- 11. Harvesting and Regeneration Systems document August 2019;
  - 12. (a) VicForests 'Precautionary principle assessment' 30 June 2020; (b) Updated 'Appendix to precautionary principle assessment - non fire affected areas' (JMG-10); (c) Adaptive management prescriptions.
  - 13. Affidavits of Mr Gunn dated 9 and 10 July 2020;
  - 14. Affidavit of Mr Paul dated 11 February 2020;
  - 15. OCR Precautionary measures in timber harvesting post the 2019/20 Victorian bushfires
  - 16. Map showing coupes overlaid with OCR Precautionary Measures Map (BTN-49)
  - 17. Code of Practice for Timber Production 2014; Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014
- C. Email from Environmental Justice Australia to Dr Smith dated 23 July 2020 with attached spreadsheets 'Traits used for each group' and 'Mammal species analysis'.

**LOGGING AND WILDFIRE IMPACTS ON THE GREATER GLIDER**  
**(*Petauroides volans*)**

**A Report to the Supreme Court of Victoria**

**Proceeding S ECI 2020 00373**

**By Dr. Andrew P. Smith.**

**30 July 2020**



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A handwritten signature in black ink, appearing to read 'A. Smith'.

## Qualification and Experience

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### Qualifications

- a) Ph. D Monash University 1981, for studies on the ecology of Leadbeater's Possum and the Sugar Glider.
- b) B.Sc. (Hons1) Sydney University 1975, majoring in entomology, zoology and botany.

### Experience General

1. Over 35 years experience in ecology of possums and gliders, and forest planning and management in the states of Victoria, New South Wales and Queensland. This includes
  - a) Completion of a Ph.D on the diet and ecology of Leadbeater's Possum and other species of possums and gliders in the Central Highlands of Victoria (1977-80);
  - b) sixteen years as a lecturer, then Associate Professor and Sub-Dean in the Faculty of Natural Resources at the University of New England conducting and supervising research of various aspects of forest fauna ecology and management (1980-96);
  - c) twenty seven years as a Director and Principal of Austeco Environmental Consultants, preparing policy documents, management plans, ecological surveys and environmental impact statements for a wide range of forestry operations.

### Experience Greater Glider

2. Devised and evaluated the stag-watching method for survey of arboreal marsupials including the Greater Glider in the Victorian Central Highlands (Smith 1980, Smith et al. 1989). Pioneered methods for wildlife survey, habitat modelling and mapping using Geographic Information Systems (GIS) (Smith et al 1989, 2002, Ferrier and Smith 1990, Smith 1997) for biodiversity conservation and management in Australia and Madagascar. Author or co-author of many studies and reports on the effects of timber harvesting on arboreal mammals including Greater Gliders (see Dunning and Smith 1986, Smith and Lindenmayer 1988, 92, Smith et al. 1993, 94, 95, 2002, Andrews et al 1994, Lindenmayer et al 1991, Eyre and Smith 1997 in cv). First to identify the threat to possums and gliders from tree hollow loss and to model relationships between arboreal mammal abundance and the number of tree hollows in forests (Smith 1982, Smith et al 1985, Smith and Lindenmayer 1988). Expert advisor on standards for protecting tree hollows in wood production forests in NSW, Queensland and Victoria (Smith et al 1985, Smith 1991, 93, Lamb et al. 1998).

### Experience Forest Policy, Ecologically Sustainable Forest Planning and Management.

3. Commissioned by NSW Government to develop guidelines for regulation and implementation of ecologically sustainable forestry operations on private lands throughout the state of New South Wales (Smith 2001/10). Devised a wide range of ecologically sustainable forest management "standards", commonly referred to as "conservation protocols", that have since been widely adopted and expanded to provide a foundation for sustainable forestry and implementation of Regional Forest Agreements. These include standards for protection of hollow dependent wildlife (habitat trees), maintaining forest structure, pre-logging surveys and protecting sensitive and poorly known threatened species and



ecological communities (Smith et al. 1992, 1993, 1994, 1995, Andrews et al 1994). Adviser to the NSW Department of Environment and Planning and the Department of Natural Resources of Queensland on prescriptions for tree hollow (old growth) protection in state forests of NSW (Smith 1993) and Qld. (Lamb et al. 1998). Proposed the original forest zoning and old growth forest protection system subsequently modified and used to maintain Leadbeater's Possum in timber production forests in the Victorian Highlands (Smith et. al. 1985). Appointed to the panel of inquiry into wood chipping (value added utilization) in East Gippsland (Gruen et al. 1989) by the Victorian Minister for Planning and Environment. Appointed to a panel of inquiry into gap and cluster clearfelling silviculture in NSW (Attiwill et al. 1996) by the NSW Minister for Land and Water Conservation. Co-convenor of a national Sustainable Forestry Conference (UNE February 1993). Reviewed forestry practices and conservation protocols in the Eden Management area for the CRA/RFA process (CSIRO et al 1997). Prepared sustainable forest management guidelines for private native forestry and timber harvesting on protected lands for the NSW Government Department of Land and Water Conservation (Smith 2001/10). Appointed to an expert panel to provide "*expert advice regarding approaches to identification and mapping of koala occurrence and habitat in areas of NSW subject to Crown and or Private Native Forestry.*" for the NSW Environment Protection Authority in 2015. Further details of qualifications and experience are provided in a summary CV attached to this report (Attachment 1).

#### **Expert Witness Code of Conduct**

4. I, Andrew Peter Smith of 35 Albany Lane Currumbin, Queensland have read, complied with and agree to be bound by the Expert Witness Code of Conduct Rule 44.01. The opinions expressed in this report are based wholly or substantially on my specialized knowledge arising from my study, research, investigation and experience in Greater Glider ecology and forest conservation and management. I declare that I have made all the inquiries which I believe are desirable and appropriate (save for any matters identified explicitly in the report), and that no matters of significance which I regard as relevant have, to my knowledge, been withheld from the Court.

#### **Brief.**

5. This report was prepared in response to a brief supplied by Danya Jacobs of Environmental Justice Australia dated 22 July 2020. Broadly the requirements of the briefs were to provide an opinion as to whether timber harvesting operations in a series of specified coupes listed in the Annex of the brief (**the Coupes**) (see Figure 1 below) within the Central Highlands of Victoria avoid serious or irreversible damage to the Greater Glider (*Petauroides volans*).



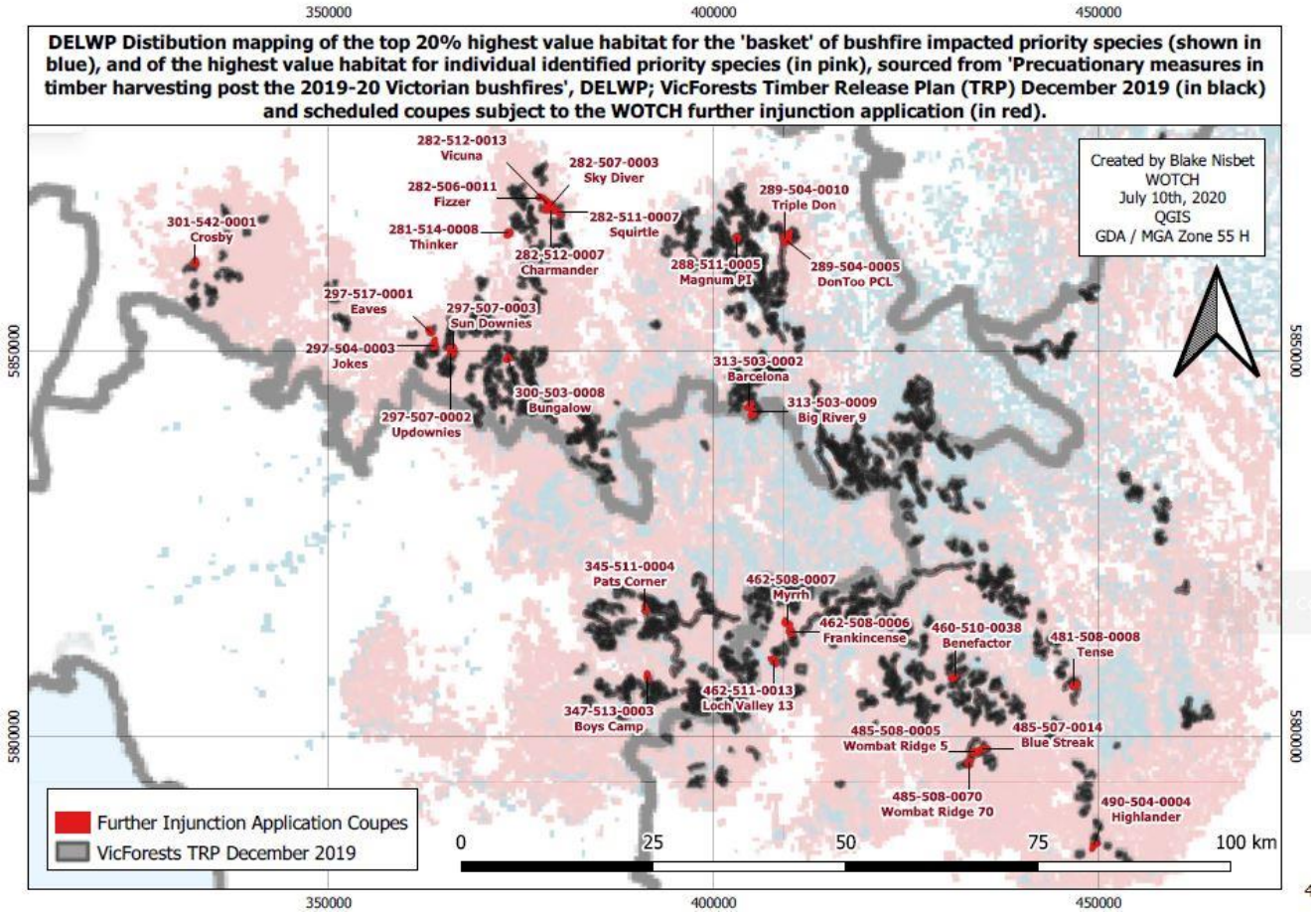


Figure 1 The Coupes



Figure 2 Distribution of the Greater Glider from Atlas of Australia (spatial.ala.org.au) web portal

**Question 1 Please describe the threats to the Greater Glider as a species and what is necessary for the recovery of the species.**

6. The Greater Glider is distributed in the more productive and taller forests of eastern Australia from north Queensland to Victoria where it feeds on eucalyptus leaves in the canopy at night and sleeps in large tree hollows during the day (McKay 2008). The location of Greater Glider records in Australia from the Atlas of Australia ([spatial.ala.org.au](http://spatial.ala.org.au)) web portal is shown in Figure 2 above (orange dots).
7. Within these forests the Greater Glider is only found within areas that satisfy its specific habitat requirements which may be summarized as follows (After Smith 2019):
  - a) scattered emergent (> 1/ha) to abundant (> 12/ha) large diameter living and dead trees with large hollows suitable for nesting (Smith et al 1985, Smith and Lindemayer 1988);
  - b) a tall open forest structure with an abundance of large tree stems (> 25 /ha) in the mature size class (40 - 80 cm diameter at breast height (dbh) and a scarcity of dense young regrowth in the subcanopy space, to provide an open structure suitable for movement by gliding (Smith 2019a);
  - c) low maximum mean monthly temperatures that do not exceed about 20 degrees C and moderate to high rainfall (>about 400 mm /annum) (Rubsamen et al 1984 and Smith unpublished);
  - d) infrequent disturbance by fire, >10-25 year intervals in Mixed Species eucalyptus forest and > 40 - 120+ year intervals (depending on intensity of fire) in wet Eucalyptus forests (Smith et al 1985, Smith et al 1994, Andrews et al 1994, MacLean et al 2018);
  - e) no recent history of high intensity logging (clearfelling) or timber harvesting that has removed more than about 33-66% (wet forests) to 15-60% (dry forests) of the natural large tree basal area (Dunning and Smith 1985, Howarth 1989, Kavanagh 2000, Eyre 2006).
  - f) no recent history of intensive Owl Predation (Kavanagh 1988, Comport et al 2006, Smith unpublished).
8. Threats to the Greater Glider include any activities that clear or modify forests in a way that reduces or removes its specific habitat requirements including large trees with hollows, large diameter trees > 40 cm, or which fragments and isolates its habitat into small patches of less than 160-2000 hectares. These threats in approximate order of importance include the following:
  - a) timber harvesting at moderate to high intensities (including clear felling and variable retention harvesting and some selection harvesting in Victoria)
  - b) frequent intense wildfire in conjunction with logging
  - c) habitat clearing
  - d) climate warming
9. Some initial decline in the distribution and abundance of Greater Gliders occurred after European settlement due to land clearing for agriculture but this threat has now largely ceased. Remaining uncleared habitat is found predominantly in State Forests managed for wood production and National Parks and Reserves. The most suitable remaining habitat generally occurs in wood production forests that have not yet been intensively logged. Such forests are now very limited and patchy in extent. Forest in National Parks generally tends to be of lower value for Greater Gliders than forest in State Forests



because it is usually fragmented and isolated, is often dominated by poor quality dry sclerophyll forests on nutrient poor soils of low economic value for clearing and agriculture, occurs on steep inaccessible terrain unsuitable for wood production, or because many forests were logged before allocation to National Parks particularly in NSW .

10. Wildfire is a natural feature of forest landscapes and native forests naturally comprise a mosaic of patches of different age and time since severe fire (sufficient to scorch or kill all leaves). There are two very different responses of forest to fire. Wet Sclerophyll forests including the Montane Ash forests of Victoria and the Blue Gum/Brush Box forests (Moist Hardwoods) of New South Wales are generally more easily killed by wildfire and tend to regenerate in more even-aged stands after severe fire. Young stands (<40 years) of uniform post fire regeneration wet sclerophyll forest are referred to as “regrowth” and old stands dominated by senescent trees older than 120 years with abundant hollows are referred to as “old growth”. Greater Gliders only occur in the old growth because there are no old trees with hollows in uniform stands of regrowth. Studies of hollow development in Ash Forests have shown that hollows do not begin to form until trees are 120 years of age and do not reach peak numbers until trees are more than 500 years old (Ambrose 1982).
  
11. Wet Sclerophyll Forests are generally found in higher elevation wetter areas where severe fire is very infrequent typically occurring at intervals of hundreds to thousands of years. At the time of European settlement wet sclerophyll forests were dominated by “old growth”. In Victoria it has been estimated that about 20% of Ash forests will be impacted by wildfire every 20 years (VEAC 2017) but not all of these fires are severe and it has been estimated that only about 25% of fires are severe enough to cause tree death (Smith and Lindenmayer 1988) such that only about 5% of Ash forests may be killed and converted to uniform aged regrowth every 20 years (Smith 2019). At these low frequencies the majority of wet sclerophyll forest at any one time would have been present as old growth under natural fire regimes at the time of European settlement. The effects of timber harvesting over the past 60 years, following the advent of clearfelling for production of woodchips and paper pulp, has greatly reduced the extent of old growth. Ash forest in the Central Highlands has been reduced to about 5000 hectares in widely scattered and fragmented locations. This is only 3% of this forest type and about 6% of its original extent, making it a rare and critically endangered community.
  
12. Wet Sclerophyll Forests that are only partially killed by wildfire develop into “uneven-aged” stands that have an overstorey of old growth and one or more understory layers of regrowth. Uneven aged forest are of key importance for the critically endangered Leadbeater’s Possum (Smith 1980, 1982, Smith and Lindenmayer 1988) which depends on hollows in the old growth overstorey for shelter, and the dense regrowth understory for feeding and moving. Greater Gliders also occur in uneven aged Wet Sclerophyll forests where more than about 40% of the original old growth canopy has survived or been retained after logging (Dunning and Smith 1986, Kavanagh 2000).

13. Dry Sclerophyll Forests (including the Mixed Species forests of Victoria) occur in lower rainfall areas and on more exposed (north facing) aspects than Wet Sclerophyll Forests. Dry Sclerophyll Forests are subject to more frequent fires and are dominated by thick barked (eg stringybark, ironbark) tree species that are more resistant to fire. These species are also more tolerant of shade which enables them to regenerate and grow beneath the forest canopy unlike species in wet sclerophyll forest which are shade intolerant and need open spaces created by fire or logging to regenerate. Dry Sclerophyll Forest species survive intense wildfires by re-sprouting from buds under the bark and growing new shoots and branches and by regenerating in small patches in the understory where smaller trees and shrubs have been killed. A portion (depending on fire intensity) of the smaller trees in the stand may be killed but generally most of the large overstorey species survive. Young trees are shade tolerant and continue to grow in the understory waiting for gaps to open up when older trees die or fall over. Dry Sclerophyll Forests typically occur in nature as uneven-aged stands with an overstorey of emergent older trees and a mixture of trees of different age in the subcanopy and understory. Dry Sclerophyll Forests with an overstorey of scattered or dominant large old trees with hollows (> 1/hectare) and a subcanopy dominated by mature trees (40-80 cm diameter) are potentially suitable for Greater Gliders (Smith et al 1985, Smith et al 1992, 1994, 95, Eyre 2006, Smith 2019a).
14. Greater Gliders in uneven-aged, old growth Dry Sclerophyll Forests are not affected by frequent low intensity fires such as control burns and grazer burns that affect the ground cover and understory vegetation only (Smith et al 1992) but may be reduced in abundance for periods of 20 years or more after intense wildfires (Smith et al 1994, Andrews et al 1994, Maclean et al 2018). It is likely that Gliders are either over heated and killed in their hollows or suffer a lack of food after severe wildfire. The time required for Glider populations to recover in Dry Sclerophyll Forest after severe wildfire will vary with the scale and intensity of fires across the landscape. In northern NSW Dry Sclerophyll Forests unburnt for 10-20 years typically support normal gliders densities (Smith et al 1994).
15. In severely burnt Wet and Dry Sclerophyll Forests Glider populations are likely to recover more slowly by expansion and dispersal from nearby unburnt or lightly burnt forests and refuges. Refuges typically occur in moist gullies, riparian zones and protected (cooler, wetter) southern aspects. The average size of trees in the canopy of old growth wet sclerophyll forests is a likely to be a good predictor of their importance as refuges because the size of the trees is a direct indicator of the length of time since the last severe fire. In Dry Sclerophyll Forests fire refuges are also likely to be those areas dominated by larger trees and with a lower than average proportion of younger stems in the understory.
16. In summary the effect of wildfire on Greater Gliders differs between Wet and Dry Sclerophyll Forests and with the scale and intensity of wildfire. In Dry Sclerophyll Forests Glider populations are initially reduced in numbers by severe wildfire but are likely to recover relatively rapidly, within about 20 or more years. In severely burnt Wet Sclerophyll Forests with uniform aged regrowth Gliders may be absent for periods of 120 years after fire but in less severely burnt Wet Sclerophyll Forests that regenerate as uneven-aged stands Gliders may be absent for periods of 20 or more years after fire similar to Dry sclerophyll forests.



17. The effects of wildfire on Greater Gliders are compounded and exacerbated by effects of logging and timber harvesting which are described in the following section. The effects of timber harvesting are generally more severe than the effects of wildfire because timber harvesting
- a) preferentially targets refuge areas and the best quality Glider habitats because these are the areas with the largest trees and most valuable timber;
  - b) wildfires accelerate and promote the production of hollows in large living trees while timber harvesting removes and reduces the number of living trees with hollows, and
  - c) intensive timber harvesting is repeated on rotations at intervals too short for forests to reach maturity, develop new hollows and form old growth.

**Question 2 Please describe the impact of timber harvesting on the Greater Glider and its habitat.**

- a) The impact in terms of individual members, local populations and the species;**
- b) The impact in respect of both current and future populations and habitat;**
- c) The nature, severity and duration of any such impact;**
- d) The effect of any such impact upon recovery of the species.**

18. The Code of Practice for forestry operations in Victoria (2014) has as its objective principle that the ecological characteristics of native flora and fauna in the forest are maintained, and has as one of its actions and goals that timber harvesting silvicultural systems suit the ecological requirements of the forest type. The only way in which this can be achieved is if timber harvesting (silvicultural) systems are designed to match the natural effects of wildfire and to allow for the recovery of animal populations after logging in the same or similar manner to which they recover after fire. There are only two silvicultural systems that satisfy this goal. They are a) low intensity single tree selection harvesting in Dry Sclerophyll Forest, and b) small gap clearfelling and low to moderate intensity selection harvesting in Wet sclerophyll Forests to produce a mix of uneven aged, old growth and regrowth forests such that the percentage of forest present as old growth at any one time does not fall below about 50% and the proportion of uneven-aged forest with an old growth overstorey does not fall below about 25%.
19. Low intensity single tree selection logging was the predominant form of timber harvesting in NSW forest until the 1960's (south east) and 1970's (north east). Surveys of forests subject to selection logging have found that impacts on Greater Gliders vary approximately in proportion to harvesting intensity and are relatively low or undiscernible when harvesting retains 85% or more of the stand basal area in low productivity Dry sclerophyll forests of southeast Queensland (Eyre 2006) and 66% of the basal area in more productive Wet and Dry Sclerophyll forests of NSW (Dunning and Smith 1986, Howarth 1992, Kavanagh 2000).
20. Since the 1960's, timber harvesting has intensified in south east NSW and Victoria in response to a market for low value high volume wood pulp for paper manufacture. Intensive harvesting is characterized by the use of clearfelling harvesting methods that remove all or most trees (other than those few retained as habitat trees or seed trees) regardless of merchantable value on short rotations of less than 60 years. A percentage of larger tree stems may be sold for higher value uses such as milling for floorboard and furniture, but the bulk of the small and medium sized trees are sold for low value wood chipping. Small stems and branches are left on site and burnt to promote seedling

regeneration. Intensive clearfell harvesting such as this in Dry Sclerophyll Forest (Mixed Species) has no natural equivalent in nature and is therefore inconsistent with the Code of Practice. In my opinion application of any clear felling to Mixed Species forest in Victoria is akin to land clearing or agricultural cropping and will cause permanent and ongoing loss of Greater Gliders from all affected areas.

21. It is also my opinion that current and proposed high intensity logging (clear felling and variable retention systems 1 and 2) logging) in all remaining Wet Sclerophyll (Mountain Ash) Forests in the Central Highlands of Victoria is inconsistent with the Code of Practice because
- a) it fails to protect habitat trees from the effects of post logging burning such that they will decline and disappear over time (Smith 2010, 2019a),
  - b) it fails to recruit sufficient new habitat trees to replace those lost by logging (Smith 2010, 2019a),
  - c) forests are re-logged on rotations too short (< 60 years) to allow the forest to recover to a mature stage suitable for Greater Gliders, and
  - d) these forests have been “mined” of old growth and overharvested to such an extent that remaining old growth and uneven-aged forest is so rare (3% of the forest area), reduced, and fragmented that there is now a very high risk that Greater Gliders and other old growth dependent fauna in these forests will be eliminated altogether, especially in the event of future extensive and severe wildfire (Smith 2010, 2019a,c).
22. There is a window of opportunity to reverse the decline in the percentage occurrence of old growth Ash forest and re-balance the forest age structure by protecting all remaining mature forest (1939 regrowth) in the Central Highlands which is now 81 years of age and which will begin to develop hollows and become old growth in another 40 years time. This would require cessation of all logging in remaining 1939 and older Mountain Ash forests in the Central Highlands and abandonment of any pre-existing commitments of regrowth ash wood supply to industry (VEAC 2017).
23. In my opinion no silvicultural methods recently or currently in use in Victoria are adequate to prevent significant adverse impacts on the Greater Glider. I have previously (Smith 2019c) provided a review of the likely impacts of VicForests proposed (May/June 2019) Harvesting and Regeneration Systems and High Conservation Values management silvicultural systems on Greater Gliders. I concluded that these methods represented little or no improvement on past practice and would have little or no benefit in preventing or reversing significant adverse impacts on Greater Gliders. I provided a list of changes to these methods which in my opinion were necessary to comply with the Code of Practice and to prevent significant impacts. VicForests has recently (August 2019) modified their proposed harvesting and regeneration systems. I have read descriptions of silvicultural systems in this report and in my opinion they do not provide substantive improvements over previous proposals and remain inadequate to prevent or mitigate impacts on Greater Gliders for reasons given above and in my previous reports (Smith 2010, 2019a,b,c). For example, the revised specifications for selection harvesting in Victorian forests are limited to forests with 10 or more habitat trees per hectare. Greater Gliders can occur in forests with just 1 habitat tree per hectare (Smith et al 1985). I fail to perceive any reason why low

intensity single tree selection harvesting should not be applied to all Mixed Species and Dry Sclerophyll forests in Victoria if it is to be consistent with the Code of Practice and prevent further significant impacts on Greater Gliders and go some way toward restoring past declines. In my opinion it is likely that the vast majority of the Greater Glider population would be missed and driven to local extinction in Victorian Dry Sclerophyll forests under the current proposal. In 2019 I recommended a number of changes to the specifications for Selection Harvesting which have not been adopted. I list these recommendations in Table 2 below with some updates.

**Table 2 Specifications for Single Tree Selection Harvesting in Mixed Species (and Ash) Forests**

- a. This method must be applied to all mixed species forests;
- b. Harvesting does not cause tree stand basal area to fall below 60% of the maximum stand basal area achievable for the forest type and location;
- c. Harvesting does not cause tree basal area and stocking (number of trees per hectare) to fall below specified minimum levels for each major tree size class (eg regrowth, pole, mature, and senescent) to ensure that all existing size classes remain represented;
- d. specified minimum stocking levels vary according to forest type, ecological objectives, productivity and growth rates with higher minimum limits in more productive forest types and locations;
- e. second and subsequent harvesting rotations are determined by forest growth rates but do not occur for at least 20-40 years (to protect understorey from damage by harvesting equipment), and not before forest growth has increased stand basal area and tree stocking margins sufficiently to permit economic harvesting;
- f. trees with large hollows are protected from harvesting unless they exceed 10/ha. in which case surplus oldgrowth may be harvested if trees have first been surveyed to ensure that they are not occupied by threatened fauna and harvesting does not exceed basal area limits (above);
- g. no habitat trees are removed or felled for health and safety considerations, where there are such concerns trees are to be left and avoided;
- h. Large fallen branches and trees on the ground are left in place to provide log habitat.
- i. regeneration is by mechanical means as use of fire may kill young regrowth in the understorey, remove logs and slow forest recovery.

24. Similarly the revised proposals for variable retention logging in Ash forests in my opinion represent little or no improvement over previous proposals because:

- a) habitat trees and recruitment trees are not adequately protected from post logging burning;
- b) any achieved increase in habitat tree density is temporary and is potentially lost by clear felling in subsequent rotations;
- c) harvesting rotations are too short to allow the forest to recover to a structure and age (60-80 years) suitable for re-occupation by Greater Gliders or to allow for development of future hollows and habitat trees (120 years).

25. In conclusion, it is my opinion that current and proposed timber harvesting operations in Ash and Mixed Species Forests in Victoria are causing and will continue to cause significant declines in Greater Glider populations within all logged coupes and within the broader surrounding area including parks and reserves by reducing connective links and habitat corridors. It is also my opinion that this impact is cumulative and potentially irreversible in the foreseeable future because of the long time scales required to regenerate hollow bearing old growth forests (120 years) and structurally suitable forest dominated by large trees (60-80 years). We can take action now to sustain the population at current levels and gradually increase the population size by ceasing all harvesting in remaining mature, uneven-aged and

oldgrowth Mountain Ash forest and by constraining timber harvesting in native Mixed Species and Dry Sclerophyll Forests to low intensity single tree selection harvesting as specified along the lines outlined by Smith 2019c and this report. This could be facilitated by shifting all pulpwood harvesting to plantation rather than native forests and by selling carbon credits for previously logged regrowth forests that are set aside to regenerate to an old growth state.

26. In summary, it is my opinion that all current and proposed timber harvesting practices in Victoria and the intensification of selective timber harvesting practices in Queensland and NSW including the recent introduction of clearfelling on short rotations in some NSW Dry Sclerophyll Forests and increases in tree basal area removal rates in Queensland State Forests, is the primary and most significant threat to Greater Gliders throughout its current known range. Furthermore timber harvesting impacts are more severe in Victoria than in NSW and Queensland because Victoria appears to have a much lower proportion of its forest habitat in National Parks than NSW, and because the extent and frequency of severe wildfire impact is much lower in Queensland and northern NSW than Victoria (see Atlas of Living Australia time since fire and forest tenure).

#### **Effects of 2019/2020 Bushfires on Greater Glider**

**Question 3 What impact has the 2019/2020 Bushfires had on Greater Glider and its habitat in Australia?**

**Question 4 Have the 2019/2020 Bushfires changed the relative importance of the populations of Greater Gliders in: a) the Central Highlands; and b) the parts of the North East, Gippsland and East Gippsland RFA areas that did not burn in the Black Summer fires?**

27. The approximate extent of the 2019/2020 bushfires is shown in Figure 3 and the extent of 2009 bushfires is shown in Figure 4. These figures does not show the severity of fires within the gross burnt area. Based on my observations of forests subject to wildfire I would expect a minimum portion (around 10-15%) of the gross area to have been unaffected and a further more substantial portion to have been less severely burnt such that trees were not killed (about 25-75%). I note that Gunn (Affidavit in these proceedings) states that of the 72624 ha impacted by fire in 2019/20 38% (27368ha) was impacted by low severity fire with light or no crown scorch.
28. In recent years the effects of intensive logging have been compounded and exacerbated by the effects of unusually severe and extensive wildfires including those in 2009 in the Central Highlands and 2019/20 in North East and East Gippsland. Together these wildfires have
- a) killed or damaged large areas of timber production forest scheduled for harvesting and reduced the future supply of timber which is likely to have intensified pressure to harvest the little remaining unburnt and unlogged forest in order to maintain timber supply commitments;
  - b) killed extensive tracts of Greater Glider habitat in many national parks and reserves (Lindenmayer et al 2011) increasing reliance the greatly reduced areas of unburnt or lightly burnt habitat in state forests for protection of Greater Gliders and other fire sensitive fauna;
  - c) greatly increased the fragmentation and isolation of remnant surviving Glider populations.

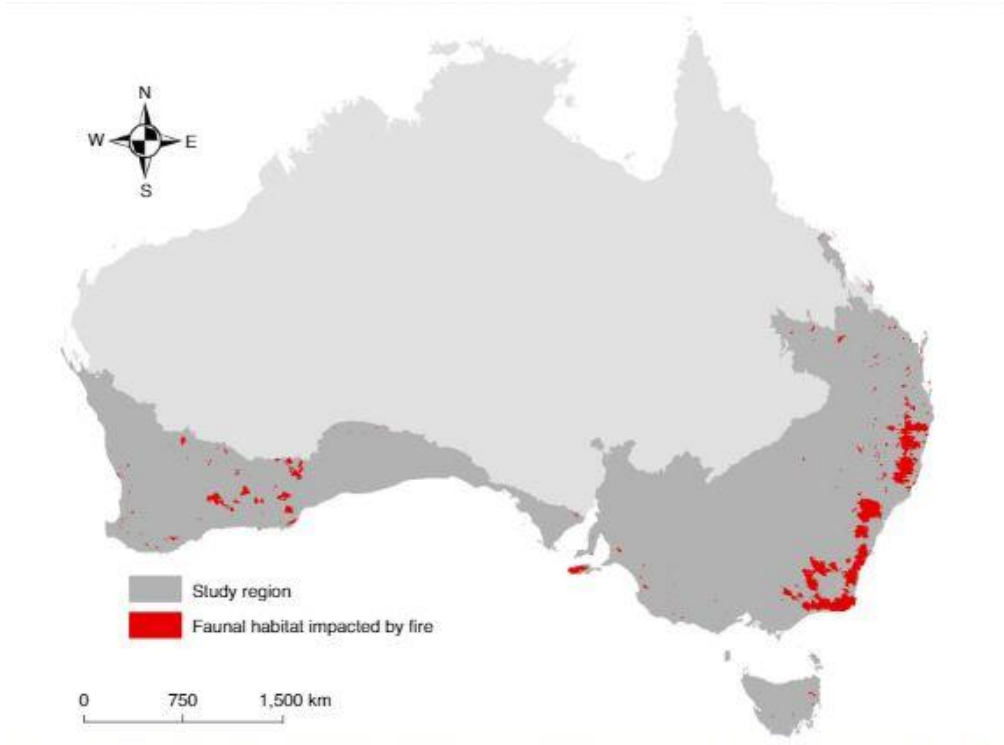


Figure 3 Extent of Wildfires 2019/20 after Ward et al 2020 (document supplied in these proceedings)

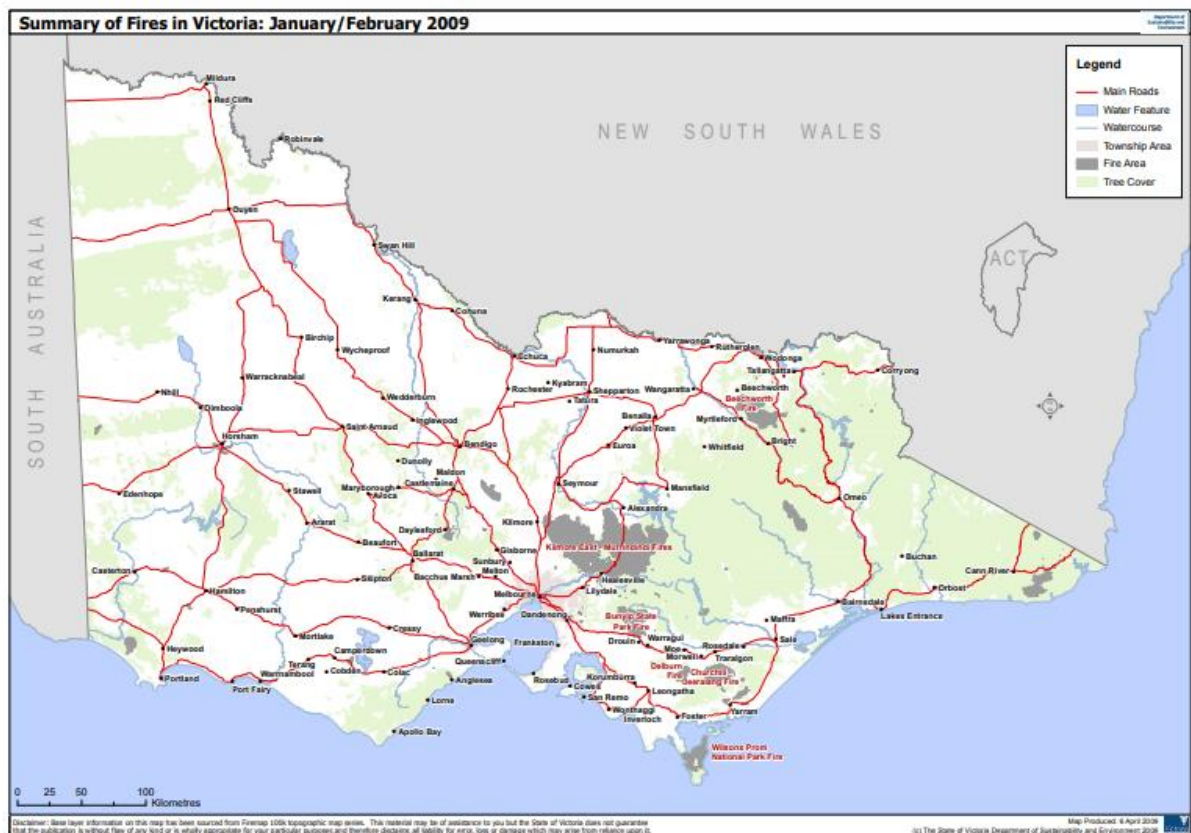


Figure 4 Extent of Wildfires 2009 after Vic Forests

29. The main effect of the 2009 and 2019/2020 bushfires in Victoria, particularly the loss of Glider habitat in the limited areas of National Park has been to greatly increase the importance of Greater Glider populations surviving in State Forests, especially the above average density populations commonly found in the Mixed Species forests of the Central Highlands including those in coupes listed and photographed in the Annex.
30. In my opinion the only way to reverse Glider populations declines and increased extinction risk from the combined effects of fire and logging is to:
- a) cease logging in all unburnt habitats with any Greater Gliders within the 2019/20 gross fire area and the 2009 gross fire area envelope for a period of 10-20 years to allow any surviving populations within these refuge areas to disperse outwards and re-colonize any available lightly burnt and recovering adjacent forest area,
  - b) limit all harvesting in other unburnt Mixed Species forests to low intensity selection harvesting (with modifications as recommended in this report);
  - c) to survey, plan and dedicate a permanent state and national corridor and fire refuge system linking all reserves and known remaining Glider populations before recommencement of any logging in burnt and unburnt areas.

**Question 5 Do you consider that any such populations constitute important populations? In your answer, please explain the characteristics of important populations of Greater Glider.**

31. With respect to the Greater Glider I consider an important population to be one which is likely to be necessary for the species long-term survival and recovery and one which is necessary for maintenance of the species genetic diversity. This includes populations which:
- i. are distributed across a very large area which is much larger than the largest possible disturbance patch that could be rendered temporarily vacant after disturbances such as intense wildfire, drought, predation, logging or climate change;
  - ii. are continuous and connected throughout its range in a manner that allows for at least periodic dispersal between sub populations after disturbance (fire, drought, logging, climate change) events;
  - iii. include fire, logging, drought and climate change refuge areas that have the lowest risk of disturbance by fire, logging, predation, drought and climate change including riparian zones, gullies, moist sheltered aspects and areas with the large old trees that have survived a long time without intense fire, to act as re-colonization sources after disturbance events.
  - iv. encompasses a wide range of natural environmental gradients (from upper to lower elevation limits) and from dry to wet forests, and across the full range of occupied forest types (in order to include or capture the full range of species potential genetic diversity);
  - v. include large populations (> 200 individuals), and sometimes isolated populations at the limits of the species geographic ranges.
  - vi. Include patches of localized high quality habitat with above average densities and large concentrations of Gliders as well as areas of more widespread low quality habitat.





32. I have previously (Smith 2019a) identified populations of the Greater Glider in the Central Highlands of Victoria and the Strathobogie Ranges to be important populations. Based on high concentrations of Glider records and my own observations of the area I consider that part of East Gippsland east of the Snowy River, centred on the Erinundra Plateau and including all wet and dry (mixed species) forests above an elevation of 200m to also be an important population. I have insufficient information to draw any conclusions about the possible occurrence of other important populations in elsewhere in the state, although it would obviously be necessary and important to recognize and retain an unlogged corridor reserve that connects the Central Highlands glider populations with those in East Gippsland and north eastern Victoria.

**Question 6 Having regard to the 2019/2020 Bushfires, are the actions described on p10-12 of the Conservation Advice sufficient to avoid serious or irreversible damage to, and recover, the species?**

33. In my opinion the specified primary conservation actions and specific actions in the Commonwealth Conservation Advice 2016 are too vague and general to avoid serious or irreversible damage to this species. The requirement to reduce prescribed burns is likely to be ineffective or damaging because the level of "reduction" is not specified and could be as little as 1%, and in some circumstances prescribed burning should be eliminated totally not just reduced, and in other circumstances it should be increased not reduced in order to reduce the risk of more extensive severe fire. The requirement to identify appropriate levels of habitat tree retention and logging rotation has already been achieved, this information is already available but is not being implemented and enforced. Similarly the specification to protect and retain hollow bearing trees and connectivity is meaningless without more detail and effective implementation as to the number of trees retained, methods of protection and retention and width and design of corridors such as those recommend in my previous reports (Smith 2019a,b,c). The Greater Glider is one of the most well researched and studied native animals in Australia, we know how to protect and recover this species, it remains simply a matter of adopting and enforcing appropriate silvicultural methods as identified by Smith 2019a.b.c and this report.

34. The Victorian 2019 Action Statement for the Greater Glider states that conservation measures will be upgraded to:

- a) end timber harvesting in old-growth forest immediately
- b) phase-out of native forest timber harvesting by 2030
- c) provide additional protection in timber harvesting coupes where 5 or more Greater Gliders per spotlight kilometre are observed.

In my opinion the first of these measures, cessation of old growth logging will have little or no benefit because the criteria used by VicForests to define and map old growth are so restrictive and inconsistent with ecological requirements of the Greater Glider that little if any further native forest is likely to be captured and protected by this change (see my oral evidence in Federal Court of Australia Proceeding VID 1228/2017). The requirement to phase out native forest timber harvesting by 2030 may or may not be of benefit to the Greater Glider depending on the extent, location and amount of unlogged uneven aged and oldgrowth forest remaining by 2030 and the likelihood of this actually happening. Any acceleration of harvesting impacts to exhaust supply prior to the 2030 deadline, especially in mature



(1939) and oldgrowth Ash and remaining stands of uneven-aged Mixed Species could hasten the demise of the Greater Glider and worsen the prospects of long term recovery.

35. The requirement to provide additional protection measures in coupes where Gliders are recorded at more than 5 animals per Km, are likely to be of little or no value because the proposed additional measures will have little or no beneficial effect (for reason outlined in more detail in following paragraphs), and because sites with 5 Gliders/km are likely to be uncommon. I have not been able to find any scientific justification for use and application of the 10 gliders per km, 5 gliders per km and 3 Gliders per km targets adopted by VicForests to determine when Greater Gliders will and will not be protected. I have undertaken extensive surveys of Greater Gliders in a wide range of forest types in eastern Australia over the past 45 years and based on this experience I consider a typical average Greater Glider density in Australian Forests to be 2.5 animals per kilometre of spotlighting or a density of 1 animal per hectare. I have also observed that high density Glider populations (more than 2 gliders/ha) are generally highly localized in small patches of just a few hectares. It is not clear to me why there are any cutoff densities for Greater Gliders below which they are not protected. In my opinion some level of protection needs to be applied to all forests with Greater Glider including those with below average density as these are likely to include populations at the limits of the species range with unique genetic adaptations to climate change and recovery from fire and droughts.

#### **VicForests' existing or adaptive measures**

**Question 7 Having regard to the impact of the 2019/2020 Bushfires on Immediate Protection Areas referred to in the Greater Glider Action Statement, and on the Greater Glider species and its habitat, is the prescription in the Action Statement to**

***“Retain at least 40% of the basal area of eucalypts across each timber harvesting coupe, prioritising live, hollow bearing trees, wherever a density of Greater Gliders equal to or greater than five individuals per spotlight kilometre (or equivalent measure) is identified”***

**a measure that is likely to be effective to avoid serious or irreversible damage to the Greater Glider:**

**(a) in the coupes in the Annex with 5 or more Greater Gliders in a kilometre?**

**(b) if it was applied to the coupes in the Annex with less than 5 Greater Gliders in a kilometre? Please answer this question having regard to the harvesting that was observed, photographed and filmed in the coupes in the Annex stated to contain 5 or more Greater Gliders in a kilometre.**

36. I estimate that a Greater Glider count of 5 per kilometre represents a Glider density of about 2/hectare. This is well above densities of about 0.6-0.8 Greater Gliders per hectare determined by radio tracking in Victorian mixed species forest by Henry (1984,1985). This target is only likely to capture a small portion of the Greater Glider population in highly localized and scattered locations. This approach will only protect many small, isolated local populations and habitat patches each too small to be viable in isolation. Even if the prescription was increased and applied to all forests with 2 Greater Glider Counts per kilometre (an effective density of about 0.8 Gliders per hectare) it would still fail to capture the broad matrix of forest that makes up the bulk of Greater Glider distribution.
37. I have further reservations about this prescription. The wording of the prescription implies that the 40% basal area retention applies to the entire coupe, including unlogged areas in creeks, corridors and special protection zones, not just the logged or net harvestable portion of the coupe. In my opinion the

prescription will not have any beneficial effect unless it is applied to the logged and loggable portion of the coupe only and targets all large trees > 40 cm dbh with priority going to retention of the largest trees first then working downwards. If this prescription is applied to the loggable portion of the coupe only then I would expect it to result in a decline in Greater Glider numbers on the coupe of between 100% and 60% depending on the pattern of tree retention and the size and distribution of trees retained. This level of harvesting intensity (60% basal area removal) is close to the limit below which Greater Gliders are not expected to survive (Dunning and Smith 1986, Howarth 1992). In my opinion if this logging were undertaken in the manner illustrated on page 21 of the VicForests August 2019 Harvesting and Regeneration Systems report for Drum Beat coupe, which show retention of living trees across > 40% of the pre-harvest assessed area, I would not expect any Greater Gliders to survive because the retained trees are small diameter, widely spread and basal area retention in the actual logged area appears to be more in the order of 10-15%. In my opinion the minimum stand basal area retention level necessary to sustain Greater Gliders within logged coupes in Mixed Species forests is 60% of the net loggable area (as listed in Table 2).

38. I have read descriptions, looked at maps showing the location of Greater Glider detection records and examined photographs and videos of logged coupes in the Annex supplied. For those coupes for which photographs were available I was able to form an opinion as to the vegetation type present (Mixed Species or Ash), the intensity and type of logging, and to some extent the degree of compliance with harvesting prescriptions, and the likely impact of harvesting on Greater Gliders. I concluded that habitat on the following coupes: (part 1) Barcelona, Tense, Myrrh, Frankinsense, Triple Don, (Part 2) Rock and Rhyme, Dowse, Mt Klondyke, Kumba, Turkey Feet, and (Part 3) Even Stephen, Glanworth, and Shetland Carriage were predominantly located within old growth Mixed Species forest of above average quality for Greater Gliders. I further concluded that a) logging on these compartments was high intensity clearfelling (inconsistent with the Code of Practice) rather than low intensity selection logging and would eliminate all the Greater Gliders present within the logged area. This will cause a reduction in the size and extent of the regional Greater Glider population which in my opinion in the absence of adequate corridor protection and uneven-aged and old growth forests protection and recruitment into the corridor and reserves system, could lead to the species regional extinction.

**Question 8 Assume that ordinarily about 25% of a coupe harvested by the clearfell or seed tree methods is retained, taken up by SPZ, stream buffers, and habitat retention. Does retention of a further 15% of the coupe (whether by area or dispersed, equating to 40% basal area retained), effectively protect the Greater Glider from the impacts of timber harvesting you identify in response to Q2? Please explain your answer, including by reference to the harvesting that was observed, photographed and filmed in the coupes in the Annex stated to contain 5 or more Greater Gliders in a kilometre, and your observations of VicForests' operations and harvesting methods (if relevant).**

39. My answer to this question is no. As previously state in paragraph 36 and previously high intensity harvesting that removes more than about 66% of the stand basal area is effectively clear felling in terms of its ecological impact. Experimental studies have shown that clear felling and high intensity logging eliminates Greater Gliders and regional surveys have shown that eliminated populations are unlikely to recover for 60 -120 years depending on the number of retained habitat trees in the stand and the ability of isolated habitat trees to survive without being destroyed by fire, windthrow or post logging burns for

up to 120 years after logging. As previously stated in paragraphs 23-26 the only form of silviculture that could be certain of protecting Greater Gliders in Mixed Species forest coupes is low intensity single tree selection as described and modified by specifications in Table 2 (paragraph 23).

**Question 9 What level of protection do VicForests' proposed adaptive measures and precautionary principle analysis provide to the Greater Glider when coupes in which the species is detected are harvested by VicForests? Please answer that question by reference to:**

- a) Documents prepared or published by VicForests: the precautionary principle analysis; the measures described in the table at 'Appendix to precautionary principle assessment – non fire affected areas' (JMG-10) – including habitat tree requirements in the Code; and the Harvesting and Regeneration Systems document; coupe plans (where provided);
- b) Mr Gunn's affidavits;
- c) The detections of the species in the Coupes and their location by reference to the harvest unit (where stated), summarised in the Annex and shown on maps enclosed;
- d) the observations of harvesting in the Annex read with the photos and/or videos of harvested coupes referred to and enclosed;
- e) your experience and observations of VicForests' operations and harvesting methods if relevant;
- f) all threats to, and the conservation status of, the Greater Glider (including its basis for listing);
- g) the impact of the bushfires on the species.

**Question 10 By reference to the matters 9a-g, are VicForests proposed adaptive measures in the Appendix to precautionary principle assessment – non fire affected areas' (JMG-10) likely to avoid serious or irreversible damage to the Greater Glider species, if applied to harvesting operations in the Coupes with Greater Glider detections in Part 1 and 2 of the Annex?**

**Question 11 On the basis of:**

- a) the descriptions of adaptive measures in Mr Gunn's affidavit and VicForests' documents, and the observations of harvesting with photos and videos in coupes containing Greater Gliders in the Annex (Parts 1-3),
- b) your experience and observations of VicForests' operations and harvesting methods if relevant, and
- c) without being provided with any monitoring survey results or reports,

**On the basis of:**

- a) the descriptions of adaptive measures in Mr Gunn's affidavit and VicForests' documents, and the observations of harvesting with photos and videos in coupes containing Greater Gliders in the Annex (Parts 1-3),
  - b) your experience and observations of VicForests' operations and harvesting methods if relevant, and
  - c) without being provided with any monitoring survey results or reports,
- do you consider it likely that VicForests' adaptive measures are "proving effective and the populations [of Greater Glider] are maintained" as stated in Mr Gunn's Second Affidavit at paragraph 8?**

40. I have examined the 2019-2020 Bushfires - VicForests Precautionary Principle Assessment approach and Adaptive Management Response 2.1 June 2020., the Appendix to precautionary principle assessment-non fire affected areas, the Affidavits of James Murdoch Gunn; the **Conservation** Regulator's May 2020 report: Precautionary measures in timber production harvesting post the 2019/20 Victorian Bushfires; and other relevant documents provided along with my brief. My assessment of the effectiveness or otherwise of actions proposed in these reports to provide protection to the Greater Glider is summarized in the following paragraphs.



41. On 17 February 2020, the Chief Conservation Regulator wrote to the Chief Executive of VicForests stating that in the light of the bushfire impacts *“it is justified not to undertake any commercial harvesting operations in the East Gippsland Forest Management Area (FMA) until further information reduces the scientific uncertainty of the potential for serious or irreversible environmental damage.”* In my opinion implementation of this recommendation and its extension for up to 10 years (depending on the availability and findings of scientific data) is essential for protection of the Greater Glider populations in East Gippsland.
42. I note that the 2009 bushfire in the Victorian Central Highlands provided an excellent opportunity for studies/surveys to more accurately and reliably determine the effects of different intensities and scales of wildfire in Ash and Mixed species forests on Greater Gliders and other fauna. The Greater Glider is a very easy species to survey, the maps of fire extent and intensity are available, and such a study would provide much of the information needed for effective landscape scale management of timber production forests burnt elsewhere in the recent 2019/20 fire. This would have the effect of removing some uncertainty from application of the Precautionary Principle.
43. The Chief Conservation Regulator reported that *“as the relative value of burnt areas has declined, so the relative value of unburnt areas has increased, including within, adjacent to and distant from the burnt areas. These impacts (which are based on modelled habitat and therefore subject to some scientific uncertainty) create the situation where (without suitable precautionary measures) timber harvesting operations could create a threat of serious or irreversible environmental damage to identified priority forest dependent species which have experienced significant fire impacts on their range, habitat and potentially on their population viability”*. I agree with this statement.
44. In my opinion the argument and logic stated above should be extended to cover the impacts of extensive and severe wildfire across the Central Highlands in 2009 as well as forests burnt in 2019/20. Studies of fire impacts on Greater Gliders and their habitat have shown that recovery does not occur for 10-20+ years after wildfire in Mixed species (Dry Sclerophyll) Forests and around 20- 120+ years in Wet Sclerophyll forests (depending on the percentage of old trees not killed by fire) (for details see paragraphs 10-17 above). Consequently it is likely that Greater Glider habitat and populations in the fire affected regions of the Central Highlands are still well below normal levels and will require precautionary protection and management measures in the same way that they will in East Gippsland after the 2019/20 fires.
45. The Conservation Regulator proposed the following precautionary measures to mitigate impacts on threatened species including the Greater Glider:
1. Continued postponement of harvesting in East Gippsland FMA
  2. Postpone harvesting in areas of highest value habitat for a 'basket' of 34 identified priority species (distribution mapped in blue);
  3. Survey and mitigate if harvesting in the best habitat for individual identified priority species (including the Greater Glider)(distribution mapped in pink).

The Conservation Regulator has developed a suite of proposed modifications for timber harvesting to implement component 3 (above) for the Greater Glider. The Existing Management Action is to: *“Retain at least 40% of the basal area of eucalypts across each timber harvesting coupe, prioritising live, hollow bearing trees, wherever a density of Greater Gliders equal to or greater than five individuals per spotlight kilometer (or equivalent measure is identified).* The example Precautionary Measure given is to: *Complete coupe surveys consistent with DELWP survey standards for Greater Glider and Yellow-bellied Glider in high quality modelled habitat and high quality site-based habitat. Retain at least 40% of the basal area of eucalypts across each timber harvesting coupe, prioritising live, hollow-bearing trees, wherever a density of 3 or more Greater Gliders or 3 or more Yellow-bellied Gliders per spotlight kilometre (or equivalent measure) is found.*

46. In my opinion both the existing and proposed precautionary harvesting mitigation measures for the Greater glider are not precautionary and will be inadequate to prevent ongoing decline and potential extinction of Greater Glider populations. I say this firstly because the 40% basal area requirement applies to the whole of the coupe and not to the net loggable area. This prescription effectively allows normal clear felling and high intensity logging within the logged area which will eliminate gliders from the harvested area (Smith 2010, 2019) . As outlined in my answer to Question 2 (Paragraphs 18-26) any form of clear felling or intensive harvesting in Mixed Species forests and uneven-aged Ash forests is inconsistent with the Code and will cause a decline in Greater Glider numbers at the coupe and regional scales and could ultimately lead to the species regional extinction.
47. Secondly, the precautionary measure requires pre-logging surveys for Greater Gliders only within modelled high quality habitat or high quality site based habitat. Modelled habitat is unreliable (Smith 2019) or uncertain, as agreed by the Regulator (see paragraph 41), and there are no specifications as to how habitat quality is to be assessed on site. In my opinion a precautionary approach would require pre-logging fauna surveys on all sites, and application of genuine precautionary measures (those proven to be effective by scientifically monitored pre-and post logging surveys) wherever they are found especially as this species is relatively easy and cost effective to survey.
48. Thirdly, the Precautionary measure calls for application of the 40% basal area target only to sites with 3 or more Greater Gliders per km. Notwithstanding the fact that the 40% prescription has little merit, both the 5 Gliders/km and 3 Gliders/ km cut offs for application of protection measures is, in my opinion, set too high to capture glider populations of average or normal density. As outlined in paragraph 35/36, I have estimated from my surveys of Greater Gliders in various parts of Australia that a count of 3/km equates on average to a density of around 1.2 Gliders/hectare. This is above the general average density of Greater Gliders of about 1 animal per hectare and well above the densities reported by Henry (1984,85) for Mixed Species forest in Victoria of 0.6 gliders per hectare. Occasionally Glider populations reach very high densities of 2 to 3 or more animals per hectare in areas of exceptional habitat quality and little or no owl predation (Comport et al 1996, A. Smith unpublished). If we protected only these few, small, highly dispersed, localized populations it is likely that the species would ultimately become extinct through isolation and fragmentation.





49. In my opinion a precautionary approach to protection of Greater Gliders in all Victorian Forests in light of the 2009 and 2019/20 wildfires would require:
- a) pre-logging surveys of all coupes,
  - b) application of low intensity (at least 60% basal area retention in the loggable area) single tree selection harvesting with priority protection of the largest trees including those with hollows in all coupes with Greater Gliders.
  - c) scientifically designed pre-and post fire monitoring to provide proof of effectiveness of mitigation measures and data for genuine Adaptive Management.
50. In May 2020, the Office of Conservation Regulator prepared a document titled "Precautionary measures in timber harvesting post the 2019/20 Victorian bushfires" (the **OCR Precautionary Measures**). It includes maps of the highest 20% value habitat for the basket of 34 most severely bushfire-affected species (blue) and of the highest 20% value habitat for each individual species of the 34 most severely bushfire-affected species (pink) (p9). The OCR Precautionary Measures included advice to postpone logging the former (blue) and avoid logging the latter (pink) where possible. I support these recommendations but note that they are unlikely to be of any beneficial effect for Greater Gliders unless a) logging is postponed for many years (3-10) until the results of fire impact survey and monitoring studies have been completed and b) the ambiguous words "where possible" is taken to mean "wherever Greater Gliders are found to be present in pre-logging surveys".
51. In relation to the VicForests "2019-2020 Bushfires - Precautionary Principle Assessment approach and Adaptive Management Response 2.1 June 2020," I note that it includes an adaptive management specification for burnt areas (2019/20) that requires planning for regional corridors and links. Specifically it states: "*In recognition that the CAR reserve system has also been impacted by fire and there is a level of uncertainty regarding this impact. Until VicForests landscape management system is in place, any coupe planned in EG, TB and NE will have assessment at a local scale that will be undertaken on a coupe by coupe basis. This will entail the application of a 3.5km planning envelope beyond the coupe boundary. Within this envelope the best suitable habitat identified will be placed in an interim VicForests exclusion zone (with a minimum of 500ha).*" In my opinion this approach is a good start for landscape scale precautionary management and needs to be extended to all Forest Management Areas in Victoria with the aim of ensuring that surviving populations of Greater Gliders isolated by past fire and logging activity are interconnected by permanent network of mapped and protected local and regional corridors.
52. The Victorian Adaptive Management systems claims to have placed increased importance on the retention, protection and recruitment of habitat trees in Ash and other logged forests. However, past experience (Smith2010, 2019a) has shown that most retained habitat trees are killed, burnt and exposed after logging to the extent that few if any are likely to survive the 60-120+ years required before regrowth forest reaches a structure suitable for Gliders in the future. I have seen no evidence in logged coupes (Smith 2010, 2019a) of any serious attempt to retain habitat and recruitment trees in protected clusters which is necessary if they are to survive very long periods. In my opinion the only reliable way

to ensure that habitat trees are retained, recruited and protected in Greater Glider habitat is to apply low intensity (> 60% basal area retention) selection harvesting that preferentially retains habitat trees and larger stems.

53. I have examined the Affidavits of Mr. Gunn. In paragraph 24 of his Affidavit Mr. Gunn notes that “ if there is a non-negligible threat of serious or irreversible damage to the environment which is attended by material scientific uncertainty, section 6.1 of the VicForests FMP required timber harvesting to be put on hold unless the following circumstances apply:

1. the threat of serious or irreversible damage to the environment is low;
2. the threat of serious or irreversible damage to the environment can be addressed by **adaptive management**; and
3. the measure(s) to be implemented is proportionate to the threat.

Mr Gunn goes on to say in paragraph 25 that “*the precautionary principle assessment concluded that any threat of serious or irreversible damage to the environment could be addressed by adaptive management.*” Mr. Gunn has not provided any data or outlined any proven adaptive methods to support this conclusion. Mr Gunn makes claims that “*The increased retention of hollow bearing trees and the use of “corridors” to provide connectivity between patches of retained trees (another adaptive management prescription) have been found to provide ongoing habitat for owls, gliders and possums.*” “*Preliminary post-harvest surveys on a select number of coupes have found arboreal mammals and owls to persist in these areas.*” This data is not presented so I am unable to review it or assess its scientific rigor and reliability. I note that in my experience the adverse effects of logging on Gliders may not become apparent for many years after logging, so I consider it unlikely that VicForests would be in position to make such a statement unless they have been monitoring post logging and fire impacts for at least 10 years. In an experimental study of the effects of logging intensity of Greater Gliders it was found that Gliders initially remained present after logging but disappeared over the next 6-8 years (Dunning and Smith 1986, Howarth 1992).

54. The second Affidavit of Mr. Gunn makes similar claims “*Para (8) Since September 2018 VicForests has been conducting a post-harvest survey program to ascertain whether its adaptive management measures are proving effective to preserve populations of species (including the Greater Glider and Sooty Owl) in coupes where it has been harvesting, including using variable retention harvesting. The preliminary results from those surveys indicates that the measures are proving effective and the populations are maintained.* My response to this claim is as in the preceding paragraph. Furthermore I find it impossible to conclude that VicForests adaptive measures are maintaining Glider populations. Under the very best imaginable harvesting methods logging reduces Glider density in Greater Glider habitat in direct proportion to the extent and intensity of harvesting so that the only circumstances under which Glider populations would be maintained and not reduced are when no logging occurs in any areas occupied by Gliders. This is clearly not current adaptive practice.





55. Paragraphs 53-55 of Mr Gunn's Affidavit claims that in the case of Barcelona coupe a minimum 64% of pre-harvest basal area has been implemented and habitat and recruitment trees will be retained at 9 per hectare. No pre-and post harvesting maps, aerial photographs or survey data is provided to substantiate this claim. I have examined photos of logging on this coupe (JRM122, JRM74) which, as best I can determine, appears to me to be very similar to normal logging practices in the Central Highlands such as those which I have examined and described in a previous reports (Smith 2019).
56. In conclusion, it is my opinion that Vic Forest's proposed adaptive measures and precautionary measures will have little or no effect in preventing the ongoing decline of Greater Glider populations in Victoria and the Central Highlands caused by current and past logging and wildfire.

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McKay, G. M. (2008). The greater glider. In *Mammals of Australia* (Ed. by S. van Dyck and R. Strahan.) pp. 240-242. (Reed Sydney.)

Mclean, C, Kavanagh, R, Penman, T., and Bradstock R. (2018) The threatened status of the hollow dependent marsupial, the greater glider (*Petauroides volans*), can be explained by impacts from wildfire and selective logging. *Forest Ecology and Management* 415-416, 19-25

Rubsamen, K., Hume, I. D., Foley, W. J., and Rubsamen, U. (1984). Implications of the large surface area to body mass ratio on the heat balance of the greater glider (*Petauroides volans*: Marsupialia). *J. Comp. Physiol. B.* 154, 105-11.

Smith, A. P. (1980) Diet and Ecology of Leadbeater's Possum and the Sugar Glider. Ph.D thesis, Monash University, Melbourne.

Smith, A. (2010). *Effects of proposed logging on populations of the Greater Glider (Petauroides volans) and Yellow-bellied Glider (Petaurus australis) in Four Coupes at Brown Mountain, East Gippsland, Victoria*. Report to the Supreme Court of Victoria Proceedings No. 8547 of 2009.

Smith A. P. (2001/10) Guidelines for sustainable forestry on private lands in NSW. Report to Department of Land and Water Conservation. Setscan Pty Ltd, Currumbin

Smith A P (2019a) Effects of past logging on 58 coupes located in the Central Highlands Regional Forest Agreement Area in Victoria on the Greater Glider (*Petauroides volans*) A report to the Federal Court of Australia Proceeding VID 1228/2017

Smith A P (2019b) Effects of past logging on 58 coupes located in the Central Highlands Regional Forest Agreement Area in Victoria on the Greater Glider (*Petauroides volans*) Supplementary Report A supplementary report to the Federal Court of Australia Proceeding VID 1228/2017

Smith A P (2019c) Effects of past logging on 58 coupes located in the Central Highlands Regional Forest Agreement Area in Victoria on the Greater Glider (*Petauroides volans*) Supplementary Report 3 A third supplementary report to the Federal Court of Australia Proceeding VID 1228/2017

Smith, A. P. and Lindenmayer, D. (1988). Tree hollow requirements of Leadbeater's Possum and other arboreal marsupials in logged Mountain Ash Forests. *Aust. Wildl. Res.* 15, 347-62

Smith, A. P., Andrews, S. A. and Moore, D. M. (1994) Terrestrial fauna of the Grafton and Casino State Forest Management Areas, description and assessment of forestry impacts. State Forests of NSW, 136 pp.

Smith A.P., Andrews S. A., Gratton G., Quin, D., and Sullivan. B. (1995) Description and assessment of forestry impacts on fauna of the Urunga-Coffs Harbour Management Areas. Supplementary Report No 4. Coffs Harbour and Urunga Forest Management Area. Environmental Impact Statement. State Forests of NSW. 160pp.

VEAC (Victorian Environmental Assessment Council) 2017 Fibre and wood supply Assessment Report. April 2017. Victorian Environmental Assessment Council



## ATTACHMENT 1 CV

## Andrew Peter Smith: summary cv

**Address:** Mail: PO Box 4130 Elanora Qld. 4221  
 Ph 07 55983952 mobile 0402432622  
 Email: [setsca@gmail.com](mailto:setsca@gmail.com)



**Nationality:** Australian

### Qualifications

B.Sc.Hons 1 University of Sydney, 1975  
 Ph.D Monash University, 1981

### Current Position

1992-2019 Director & Principal of Setscan Pty Ltd T/A Austeco Environmental Consultants

### Previous Positions

2010-17 Director, Trustee & Manager Anna Cove Pty Ltd and Waezone Pty Ltd Commercial Investment Property Trusts on behalf of private unit holders (asset value \$13 Million)  
 2003-2004 Chairman, Board of the Nature Conservation Trust of NSW  
 2001-2007 Professional Conduct & Ethics Committee, Ecological Consultants Assoc. NSW.  
 1999-2001 Foundation President, Ecological Consultants Association of NSW  
 1991-96 Associate Professor of Natural Resources, University of New England  
 1986-93 Sub Dean of Natural Resources, University of New England  
 1980-85 Lecturer in Natural Resources, University of New England  
 1989-90 Leader, World Wildlife Fund / USAID Biodiversity Planning Mission Madagascar  
 1977-80 Commonwealth Postgraduate Scholar, Monash University  
 1976 Experimental Officer, CSIRO Division of Entomology, Darwin.

### Management Experience

- ❑ Director and Principal of Austeco Environmental Consultants (budgeting, tendering, client liaison, team leader for a wide range of ecological projects) 1992-p
- ❑ Director and Chairperson for two commercial unlisted property trusts (arranging finance, loans, leasing, general property management, trustee duties for unit holders).2011-2017
- ❑ Director of Newholme, University of New England Natural Resource & Agricultural Research Centre (funding, staffing, strategic planning, environmental and agricultural enterprise management).1985-92

### Environmental & Scientific Expertise

- ❑ Environmental Law: expert witness in the NSW Land & Environment Court on a wide range of environmental matters including provision of evidence, reports, negotiation, mediation, and joint conferencing, for a wide range of private and government clients including Department of Planning, DECCW, and various Councils. (1990-p)
- ❑ Environmental Planning and Management: team leader for design, assessment, implementation, review and monitoring of ecological components of a wide range of major projects including subdivision, utility services, & mining.1987-p
- ❑ Independent reviewer for ecological components of a wide range of environmental development projects including subdivisions, power lines, pipe lines, road works, dams, sewage treatment for Department of Planning, Councils, solicitors, major developers and various private clients.1992-p
- ❑ Threatened Species: survey, impact assessment, research, monitoring and management. 1976-p
- ❑ Endangered Ecological Communities: survey, classification, management & remediation.1992-p
- ❑ Vegetation Survey, Classification, Mapping, Restoration & Management. 1992-p
- ❑ Air Photo (and Satellite Image) interpretation, classification and mapping. 1977-p
- ❑ Biodiversity Methods; wildlife survey, habitat survey, statistical analysis, modelling 1977-p

- ❑ Invertebrates: survey methods, ecology, conservation significance, insectivore diets.1970-p
- ❑ Native Vegetation Clearing & Conservation: policy, compliance, remediation, tree ageing.1995-p
- ❑ Possums, Gliders and the Koala: ecology, conservation and management.1977-p
- ❑ Ecologically Sustainable Forestry 1978-p
- ❑ Eucalypt Dieback 1978-p

### Report Writing & Publication

- ❑ Author or co-author of more than 50 refereed original scientific research papers
- ❑ Author or co-author of more than 60 major environmental reviews, assessments, & reports
- ❑ Author and co-author of major policy reports, guidelines and expert systems for the NSW government to facilitate implementation of environmental legislation including ecologically sustainable forestry guidelines for private lands, clearing in the western Division (WISE), and threatened species protection on Protected Lands (Habasys).

### Teaching, Extension & Media Presentation

- ❑ 16 years academic experience teaching natural resource management at a tertiary level
- ❑ 20 years experience presenting professional short courses and workshops
- ❑ Presentation of more than 35 invited lectures and talks to institutions, organizations, and the media.

### Some Key Service Positions

- ❑ Foundation Member and Chairman of the NSW Nature Conservation Trust (2002-2004)
- ❑ Foundation President of the Ecological Consultants Association of NSW (1999-01)
- ❑ Member, Hastings River Mouse Recovery Team 1992-2001
- ❑ Member, International Union for Conservation of Nature Marsupial Specialist Group 1985-p
- ❑ Member, Leadbeater's Possum Management Advisory Committee 1980-96
- ❑ Member, Inter-agency Advisory Committee on clearing controls in the Western Division of NSW Department of Land and Water Conservation 1995-7.
- ❑ International Team Leader, National Park Design, Madagascar, WWF International, 1989-95
- ❑ Convener (Biological Conservation) International Mammal Congress Rome 89, Sydney 93.
- ❑ Convenor Maurice Wyndham National Sustainable Forestry Conference, UNE, 1993
- ❑ Convenor, possum and glider symposium University of New England, 1984
- ❑ Scientific referee for more than 13 scientific journals

### Appointments to Expert Panels and Inquiries (1989-2015)

Appointments to government expert panels and inquiries into a wide range of conservation and natural resource management issues including the following examples:

#### Koala Expert Group

- ❑ **EPA NSW Govt. (2015)** Independent koala expert, koala habitat definition, mapping and conservation planning.

#### Ecologically Sustainable Land Use Planning

- ❑ **Coffs Harbour City Council (2009)** Independent review of regional corridor plan & strategy
- ❑ **Great Lakes Council (2002)** Chairperson Expert Panel, Ecological Constraints Planning, Hawks Nest Study Area

#### Biodiversity Conservation

- ❑ **NSW National Parks and Wildlife Service (2000)**: Koala Expert Panel, preparation of guidelines, methods & models for the koala under the Native Vegetation Conservation Act.
- ❑ **Department of Urban Affairs and Planning, NSW (1998)**: Sustainable Forest Management Systems, member of expert panel appointed to review management systems, policies, environmental laws and processes for achieving ecologically sustainable forest management in all New South Wales Government Departments involved in environment regulation (NPWS, DUAP, EPA, SFNSW, DLWC, DMR).

### Ecologically Sustainable Forestry

- ❑ **Department of Natural Resources, QLD (1998):** Tree Hollows Expert Group, formulation of guidelines and prescriptions for managing habitat trees in Queensland state forests.
- ❑ **Environment Australia (1998):** Threatened and Significant Species Expert (nocturnal birds, arboreal mammals, frogs, bats, & terrestrial mammals), responsible for devising and recommending reservation and management strategies for threatened & significant species in forest CRA regions.
- ❑ **Forests Task Force Department of Prime Minister and Cabinet and Resource and Conservation Assessment Council NSW. (1997).** Fauna Expert, expert group report on forest management practices for Eden Regional Forest Agreement (RFA).
- ❑ **Ministry for Land and Water Conservation, NSW (1996):** Sustainable Forestry Expert, one of three experts appointed to review the proposed Gap and Cluster Silvicultural Method for the Minister for Land and Water Conservation.

### Heritage Conservation

- ❑ **Australian Heritage Commission (1993-94):** Expert adviser on procedures for identification of places of significance for listing on the National Estate.
- ❑ **Ministry for Planning and Environment, Victoria (1989):** One of three experts appointed to conduct a hearing and inquiry into a proposed wood-chipping and pulp mill development in East Gippsland.

### **Some Major Projects & Clients**

- ❑ **Environmental Protection Authority 2015-16** of NSW Expert review of koala habitat mapping survey and validation study.
- ❑ **Environmental Justice Australia 2016** Supreme Court Proceedings impacts of forestry on Yellow-bellied Gliders in East Gippsland 2016.
- ❑ **Byron Bay West Landholders Association (2010-15):** Design, supervision, review and strategic planning of ecological components (all flora & fauna), major projects West Byron.
- ❑ **Gales Holdings (2003-11)** Design, supervision, review and monitoring of ecological components of proposed developments, including expert witness services, and preparation of ecological management plans for Wallum Froglet and Mitchell's Snail Kingscliff, Tweed Shire.
- ❑ **Newcastle City Council (2010):** independent peer review and expert witness ecological impacts of road works of threatened bats.
- ❑ **Environmental Defenders Office (2009-10)** Expert witness, review of ecological impacts (endangered ecological communities, fauna) of proposed limestone mining Hunter Valley.
- ❑ **Department of Environment and Conservation (2008-09):** Expert witness, assessment of illegal clearing impacts on threatened fauna and endangered ecological communities under the NVA 2003 and TSC Acts, Port Stephens and Pilliga regions of NSW.
- ❑ **Department of Planning (2008)** Expert review of development impacts on the Koala threatened fauna and endangered ecological communities Hawks Nest NSW.
- ❑ **Lake Macquarie City Council (2007-08):** preparation of Squirrel Glider Conservation Plan.
- ❑ **Mirvac Pty Ltd, Walker Corp., Johnson Property Group Pty., Ltd., (2003-2010):** ecologically sustainable development planning (ecological constraints mapping, threatened species and endangered community assessment, koala management, habitat restoration, monitoring and management, liaison with Councils and Government) various localities in Great Lakes, Lake Macquarie, Port Stephens, Tweed and Wyong Shires.
- ❑ **Wyong Shire Council (1999-2003):** Biodiversity and threatened species conservation planning for Biodiversity Certification including: threatened species habitat modelling and mapping with GIS, corridor planning, population viability assessment, setting conservation targets & reserve design for the entire Shire .
- ❑ **Wyong Shire Council (2002):** Preparation of Squirrel Glider Conservation Management Plan.
- ❑ **Department of Land and Water Conservation (2000-03):** Preparation of guidelines for sustainable land clearing, threatened species protection and native vegetation conservation in western NSW including the northern floodplains bioregion of NSW (for NPWS and DLWC) and review of southern mallee clearing guidelines (for DLWC).

- ❑ **ACI Glass (2000):** review of mining impacts on threatened species and vegetation restoration on coastal dunes.
- ❑ **Department of Land & Water Conservation (1999-02):** Preparation of guidelines and decision support system for ecologically sustainable forestry on freehold lands in NSW and for land clearing in central and western NSW.
- ❑ **NSW National Parks & Wildlife Service (1999-2000):** Preparation of guidelines for biodiversity planning and threatened species conservation in Western NSW.
- ❑ **NSW National Parks & Wildlife Service (1998-2000):** Flora survey, vegetation classification, mapping, modelling, and threatened flora management for various national parks in the Dorrigo and Glen Innes regions of north east NSW.
- ❑ **State Forests of NSW (1996-97):** Koala survey, habitat modelling, forestry impact assessment, and conservation planning Pine Creek State Forest.
- ❑ **State Forest of NSW (1992-97):** Fauna and Flora Surveys, Impact Assessments, Mitigation Measures for Sustainable Forestry and Preparation of Fauna Impact Statements and Species Impact Statements for various State Forests in north east NSW (Glen Innes, Coffs Harbour, Urunga, Grafton, Murwillumbah)
- ❑ **Hastings River Mouse Recovery Team (1995-97):** Preparation of Hastings River Mouse Recovery Plan, including additional survey, diet research, habitat modelling and conservation planning.
- ❑ **Department of Urban Affairs & Planning (RACAC, 1997):** Assessment of forest management practices on biodiversity (flora and fauna) in the Eden Management Area.
- ❑ **Department of Public Works and Services (1996):** Assessment and mitigation of sewerage outfall impacts on aquatic communities, Port Macquarie.
- ❑ **State Forests of NSW (1991-1995):** Fauna and flora surveys and preparation of fauna impact statements and species impact statements for proposed forestry operations in Murwillumbah, Grafton, Casino, Glenn Innes, Coffs Harbour and Urunga forestry districts.
- ❑ **World Wildlife Fund & USAID (1989-95):** Nature reserve design in Madagascar using rapid biodiversity survey methods and biodiversity modelling with Geographic Information Systems.
- ❑ **World Wildlife Fund Australia and (1985-87)** Survey and management of Leadbeater's Possum

### **Supreme Court Experience**

- ❑ Environment East Gippsland Inc v VicForests. 2010 VSC 335 Expert evidence on impacts of forestry practices on possums and gliders.
- ❑ Gales Holdings v Tweed Shire Council 2011. Expert evidence on vegetation change (from air photos and ground surveys), and threatened fauna (wallum froglet, Mitchell's Rainforest Snail) habitat change following alterations to drainage and hydrology.

### **NSW Land & Environment Court Experience**

#### **Court Appointed Expert**

- ❑ Threatened Fauna and Flora, KR Nash v Minister Administering Environmental Planning and Assessment Act 1927 no 10530 of 2006
- ❑ Threatened Fauna and Flora, Jarberg Investments PL v Great Lakes Council LEC Proceedings 10277 of 2005;
- ❑ Squirrel Gliders, First Cape Management PL v Lake Macquarie City Council. LEC Proceedings 11475 of 2004;
- ❑ Squirrel Gliders, CBD Prestige Properties Holdings v Lake Macquarie City Council. LEC proceedings 11067 and 11110 of 2004.

#### **NSW National Parks and Wildlife Act:**

- ❑ Expert witness for Corkill in Corkill vs Forestry Commission of NSW, one of 10 expert witness in the landmark Chaelundi case which gave rise to the NSW Endangered Fauna Interim Protection Act 1991).

#### **Endangered Fauna Interim Protection Act:**

- ❑ Expert witness for NSW National Parks and Wildlife Service, first prosecution under the Endangered Fauna Interim Protection Act, 1994 (for taking and killing Koalas).

**Mining Impacts & Rehabilitation:**

- ❑ Expert witness limestone mining impacts on endangered ecological communities and threatened species (Upper Hunter Shire Council and Stoneco v Newcastle and Hunter Valley Speleological Society (LEC 10497 of 2009).
- ❑ Expert witness (provided preferred evidence on vegetation restoration, wallum froglet, and other threatened fauna) for ACI glass (sand mining) in ACI v Port Stephens Council, 2000.

**Endangered Ecological Communities**

- ❑ EECs on NSW coastal floodplains, provided key evidence for two landmark cases which clarified the identification of coastal floodplain EECs, Ports Stephens Council v Motorplex Australia LEC 11328 of 2004,
- ❑ EECs on NSW coastal floodplains, landmark case which clarified exclusion of sand plain communities from coastal floodplain EECs, Gales Holdings Pty Limited v Tweed Shire Council [2008] NSWLEC 209 10264 of 2005).

**Threatened Species (Koala, Phascogale, Wallum Froglet, Squirrel Glider and others):**

- ❑ Expert witness threatened fauna and flora, Motorplex Australia PL v Port Stephens Shire Council. LEC 11328 of 2004;
- ❑ Expert witness threatened fauna and flora Mahogany Ridge Developments PL v Port Stephens Council LEC Proceedings 10526 of 2004;
- ❑ Expert witness threatened flora and endangered communities, HEZ v Hunter Ecologically Sustainable Development Group Inc. LEC Proceedings 41046 of 2003;
- ❑ Expert witness Green and Golden Bell Frog, Kurnell Peninsula, Australand v Sutherland Shire (2003);
- ❑ Expert witness Phascogales, Koalas, squirrel gliders and native vegetation for Port Stephens Port Stephens v Excel Properties 200, Citizens Aged Care 2002, Plan Vision 2003
- ❑ Expert witness Squirrel Gliders the Heritage Lifestyle Resorts PL v Great Lakes Council LEC proceedings 10646 of 2002;
- ❑ Expert witness squirrel gliders for BHP and AV Jennings in Sinclair Knight v Lake Macquarie Council re subdivision of Apollo Drive, 1999, Hynes Urban Planners v Hawkesbury Council 2003.
- ❑ Commissioned by Byron Shire Council to review evidence on flora, fauna and waste impacts of proposed residential and tourism development, 1999.
- ❑ Expert witness impacts on threatened fauna Healesville Holdings v Pittwater Council, 1997.
- ❑ Expert witness habitat loss, Pittwater Council in Planning Workshop v Pittwater Council, a landmark case which established the principle of cumulative habitat loss, 1996.
- ❑ Expert witness, Yellow-bellied Glider, Sparks v Gosford City Council. 2002
- ❑ Expert witness, koala, Ronro v Port Stephens Shire Council, Plan Vision v Port Stephens Council 2003.
- ❑ Expert witness, threatened flora, Hunter Ecologically Sustainable Employment Group v HEZ and others, Cessnock 2003.

**Coastal Development**

- ❑ Commissioned by NSW National Parks and Wildlife Service to provide an independent assessment of the Fauna Impact Statements and evidence before the Commission of Inquiry for residential subdivision of Long Bow Point/Lake Wollumboola, Culburra, Shoalhaven CC, 1999.
- ❑ Expert witness on koalas & SEPP 44, Camden Shores canal development Commission of Inquiry, 1995.

**Highways & Roads:**

- ❑ Expert witness for VICROADs on highway extension impacts on threatened species habitat, 1995.

**SEPP 46**

- ❑ Expert witness on environmental harm after vegetation clearing in central NSW, numerous cases, DLWC vs Hunter, DLWC vs Cameron, DLWC vs Orlando Farms; DLWC vs Bungle Gully, DLWC vs Pye, DLWC vs Ikaro, DLWC vs Locke; DLWC vs Prime Grain, 1997-98.
- ❑ Expert witness on environmental harm caused by rainforest clearing DLWC vs Robson, 1998.

**Native Vegetation Conservation Act 1997**

- ❑ Expert witness, impacts of native vegetation and threatened fauna habitat clearing, habitat remediation, DNR v Taylor 2007 NSWLEC 530

- ❑ Expert witness, impacts of native vegetation clearing, age of regrowth, Dalimen Pty. Ltd v Director General DIPNR, LEC Proceedings 11375 of 2003
- ❑ Expert witness on age of trees, regrowth and vegetation, and impacts on threatened species in spotted gum ironbark coastal forests, DLWC vs Wilkinson, 2001.
- ❑ Expert witness on environmental harm following woodland clearing in western division, DLWC vs Greentree, 2001.

**Native Vegetation Act 2003**

- ❑ Expert witness, whether vegetation is older than 1 January 1990, DECC v Fish/Orogen 2010 NSWLEC 144.

**Land Valuation**

- ❑ Expert witness, estimated damages caused by illegal logging and clearing on proposed ecotourism site Ferrato vs Hayward & Ors, 2000.
- ❑ Expert witness, estimation of damages for burning impacts on natural areas for P. Khuen, 2000.

**Key Talks & Presentations (Environmental Legislation)**

- ❑ Trends in best practice ecological consulting 1977-2008. Keynote address, annual conference of the Ecological Consultants Association, 5 Sept. 2008, Sydney NSW
- ❑ Creating and Energy Efficient Future, workshop presentation Ecole D'Igenieurs, (institute of Female Engineers) Sceux Paris (July 2007).
- ❑ Role of the expert witness and assessing environmental harm, presentation to DLWC Vegetation Compliance Officers course, Goulburn Police Academy (Aug 2001).
- ❑ Fauna impact assessment and mitigation, Annual Conference of Judges of the Land and Environment Court of NSW (Oct. 1995).
- ❑ Australian Environment Institute, Fauna Impact Assessment Seminar Series, seminar on new directions for endangered fauna legislation in NSW, Sydney (Aug. 1995).



## Andrew Peter Smith: cv details

### PROFESSIONAL SHORT COURSES AND WORKSHOP PRESENTATIONS

#### ***Continuing Education (UNE)***

- 1981 Rainforest mammals, Lismore field school
- 1984 Rainforest mammals, Lismore field school
- 1985 Coastal wildlife, Limeburners Creek field school
- 1986 Arboreal Mammals of Armidale region, spotlighting excursion.
- 1986 Mammals of the Tamworth region, seminar Tamworth.
- 1988 Role of forest remnants for nature conservation, Agroforestry and re-forestation workshop, Valla Beach.

#### ***Professional Short Courses (UNE)***

- 1987 Environmental Planning and Management Workshop (contributions on: ecological impact assessment, cost-benefit of wildlife values and integration of wildlife conservation and timber production ).
- 1992 GIS and developing countries
- 1993 Economics of Resource and Environmental Management course: contribution on GIS and sustainable land planning and management, 13 April 1993.
- 1993 Rural planning and development in the Philippines, role of GIS, June 93
- 1993 Sustainable rural development 11 Nov 93
- 1994 GIS and developing countries- 16 May 93
- 1994 Economics of Resource and Environmental Management course: contribution on GIS and sustainable land planning and management, 6 may 94.

#### ***Department of Land and Water Conservation***

- 1993 Endangered Fauna Management on Protected Lands: workshop and field school - Newholme Field Lab. UNE, 16-17 Feb.
- 1994 Endangered Fauna Management on Protected Lands: workshop and field school - Grafton NSW 15-16 March  
- Newholme Field Lab. UNE, 8-9 June
- 1996 Keynote Speaker, workshop on processing SEPP 46 clearing applications by officers of the Department of Water and Land Conservation.
- 1999 Key speaker, workshop for DLWC vegetation compliance officers, Manly.
- 2001 Role of the expert witness and gathering evidence of environmental harm: Professional short course for DLWC compliance Officers Goulburn Police Academy, Goulburn 7 Aug.

#### ***Judiciary of the NSW Land and Environment Court***

- 1995 Methods of Fauna Impact Assessment, Annual Conference of the Land and Environment Court, Wyong, October 1995.

#### ***National Parks and Wildlife Service of NSW***

- 1998 Presentation to workshop on impacts of grazing on forests. 14 May.

#### ***Soil Conservation Service of NSW/ Dept. Water Resources NSW:***

- 1992 Endangered Fauna Management Workshops, Procedures for assessing applications for clearing and development of endangered fauna habitat on protected lands two day workshops Dorrig (21- 22 July), Mittagong (27-29 July) Scone 15-16 Sept)

### VOLUNTARY POSITIONS & BIODIVERSITY CONSERVATION SERVICES

#### ***Austin College University of New England***

- 1983-91 College Fellow, Austin College

#### ***Australian Heritage Commission***

- 1993 AHC Invited expert adviser, AHC Workshop on " Procedures for identification of places of fauna significance for listing on the National Estate" Canberra 28-29 Oct.



1993-94 Adviser to AHC and Department of Conservation and Natural Resources on development of fauna habitat classes for the Central Highlands National Estate Project

**Australian Geographic**

1990 Scientific Representative, Cape York Scientific Expedition 9-17 JunE  
1992 Scientific Representative, Central Australia Scientific Expedition Aug 22- 29 1992.

**Australian Mammal Society**

1983 Convenor, Australian Mammal Society Annual Conference and Possums and Gliders Symposium  
1984 Senior Editor Australian Mammal Society, Possums and Gliders Symposium proceedings 1985.

**Conservation International**

1995 GIS specialist, Conservation International Conservation Priorities Workshop, Antananarivo, Madagascar, 10-14 April.

**Department of Land and Water Conservation (NSW)**

1995-7 Member, inter-agency advisory committee on clearing controls in Western Division NSW.

**Department of Conservation and Natural Resources (VIC)**

1980- Member, Leadbeater's Possum Management Advisory Committee 1980-96

**Ecological Consultants Association of NSW**

1999-2004 Foundation president, chair of accreditation and standards committee, member of Council

**International Union for Conservation of Nature (IUCN)**

1985-2006 Member, Marsupial Specialist Group

**International Mammal Congress**

1989 Co-convenor Biological Conservation Symposium, V th International Theriological (mammal) Congress Rome  
1993 Co-convenor Biological conservation Symposium V1th International Theriological (mammal) Congress, Sydney 1993.

**Invergowrie Environmental Action Society**

1988-95 President Invergowrie Environmental Action Society

**Maurice Wyndham Conferences**

1993 Co-convenor Maurice Wyndham National Sustainable Forestry Conference, University of New England Armidale, February 1993

**NSW National Parks and Wildlife Service**

1992 Fauna survey design workshop. Iluka N.R. Sept.  
1992-p Member, Hastings River Mouse Recovery Team 1992-2001

**NSW Government, SFNSW and NPWS Joint Oldgrowth Forest Project.**

1993 Consultant adviser on methods of fauna survey design.

**NSW Nature Conservation Trust**

2002 -4 Foundation Board Member and Chairman 2003.

**National Resources Audit Council (NRAC)**

1994-5 Member Technical Advisory Group.

**Senate Standing Committee on Science and Environment**

1979 Adviser, woodchip inquiry, 1979.

**World Wildlife Fund Australia**

1985-87 Leader: Leadbeater's possum conservation and management study

**World Wildlife Fund International and US-AID**

1990 Leader: feasibility study for establishment of a computer-based (GIS) "Biodiversity Planning Service", for threatened flora and fauna conservation in Madagascar.  
1991 Leader: Pilot study to evaluate application of GIS to biodiversity planning in Madagascar.

**Scientific Referee (for papers in following national & international journals):**

Biological Conservation	Pacific Conservation Biology
Physiological Ecology	Wildlife Research
Forest Ecology and Management	Zoological Society of London
Australian Journal of Botany	Australian Journal of Zoology
Australian Journal of Entomology	Australian Journal of Ecology
Australian Mammalogy	Ecological Management & Restoration

<b>GUEST LECTURES, TALKS AND MEDIA PRESENTATIONS</b>
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**A.B.C. Radio**

- 1978 Social Organisation of Leadbeater's Possum, Radio Talk.
- 1985 Management and Conservation of Leadbeater's Possum, radio interview.
- 1989 Long-footed Potoroo in NSW, radio interview
- 1990 Management of Leadbeater's possum, radio interview.
- 1990 Computer based conservation in Madagascar, radio interview.
- 1991 Biodiversity conservation in Madagascar, radio interview
- 1992 Lemur conservation in Madagascar radio interview
- 1994 Endangered fauna legislation, implications for clearing and development on rural lands

**A.B.C./B.B.C Television**

- 1979 Research studies of Leadbeater's Possum featured on "Earthwatch" programme.
- 1979 Assistance to Natural History unit in filming Sugar Glider "gliding sequences" for David Attenborough's Life on Earth and other series.
- 1987 Supply of research photographs and material on wasp nest building behaviour for James Gould's "animal intelligence" series.
- 1991 Biological control of New England Dieback by Sugar Gliders, ABC series "Quantum".
- 2000 BBC/Green Umbrella "Triumph of Life" series on instinctive behaviour of insects featured my research on nest building behaviour by wasps.

**Australian Institute of Foresters.**

- 1979 Maintenance and management of Leadbeater's Possum, Seminar, Australian Institute of Foresters.

**Australian Geographic**

- 1990 Invited keynote speaker, Australian Geographic Awards night, Sydney

**Creswick Forestry School**

- 1984 The role of natural predators in control of New England Dieback, Seminar, Excursion.

**Department of Land & Water Conservation**

- 2001 Address to the Northern Floodplains Regional Planning Committee on development and application of the WISE threatened species guidelines.
- 2001 Address to the Lismore Regional Vegetation Management Planning Committee on ecologically sustainable forestry on private lands.

**Ecological Consultants Association of NSW**

- 2006 The Role of Corridors: invited paper, annual conference ECA Sydney.
- 2008 Keynote address: trends in ecological consulting. Annual Conference ECA, Manly NSW

**International Institute of Women Engineers.**

- 2007 Invited address: An energy efficient future the role of forests and carbon credits. Sceaux School of Engineers, Paris.

**Mammal Survey Group of Victoria.**

- 1979 Ecology of Leadbeater's Possum, Seminar. Melbourne Zoo.

**National Parks Association (New England Branch).**

- 1979 Effects of logging on Leadbeater's Possum, Field Day
- 1980 Dietary ecology of Possums and Gliders, Seminar.
- 1981 Life Histories of Australian Marsupials, Seminar,
- 1981 Natural History of New England Mammals, Seminar.
- 1983 Effects of logging on wildlife, Seminar.
- 1986 Desert National Parks of S. West U.S.A. ancient history, natural history and geology.
- 1986 Arboreal mammals of Mt. Duval, Field Excursion, New England Tree Group
- 1991 Biological Control of New England Dieback by Sugar Gliders

**Nature Conservation Council of NSW**

- 1998 Squirrel gliders, Pittwater Council and housing development. Univ. Sydney 1-2 May
- 1999 Ecological assessment of fire on forests. Univ. of Sydney 14-5 Feb.

**Society for Growing Australian Plants**

- 1984 Wildlife Conservation in the Rural Environment, Seminar.
- 1988 Biological control of sawflies and scale insects in native gardens.
- 1992 Biological Control of New England Dieback by Sugar Gliders

**Universities/CSIRO Guest Seminars and Lectures**

- 1984 Possums and Glider Ecology, Zoology Department, La Trobe University
- 1986 Possums and Glider Ecology, Zoology Department, La Trobe University

- 1986 Management of Leadbeater's Possum, Zoology Department, La Trobe University  
 1988 Plant animal interactions, Department of Zoology, University of Sydney.  
 1992 Biodiversity conservation in Madagascar, Department of Zoology, Univ. Qld.  
 1994 Endangered Fauna Management in NSW, CSIRO Division of Wildlife and Ecology, Helena Valley, Perth

#### **Victorian Field Naturalists**

- 1978 "Ecology of the Sugar Glider", Seminar.

#### **Whitehouse Technical College**

- 1978 'Ecology of Leadbeater's Possum', Seminar.  
 1979 'Ecology and management of Leadbeater's Possum, Seminar.

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22 July 2020

Dr Andrew Smith  
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Dear Dr Smith

**WOTCH Inc v VicForests | Supreme Court of Victoria proceeding S ECI 2020 00373**

1. We act for WOTCH Inc, the Plaintiff in the above proceeding.
2. Our client has commenced the above proceedings against VicForests. In broad terms, the proceeding concerns whether VicForests has failed, is failing and will fail to:
  - (a) take a precautionary approach, or
  - (b) consider the advice of relevant experts and relevant research,when harvesting the habitat of threatened species that have been affected by the 2019/2020 bushfires.
3. Our client alleges that it is unlawful for VicForests to harvest timber in coupes known to contain, or be likely to contain, bushfire-affected threatened species or habitat of such species:
  - (a) unless timber harvesting operations avoid serious or irreversible damage to those species; or
  - (b) until State and Commonwealth bushfire biodiversity responses have concluded and timber harvesting operations are managed in light of the conclusions reached in those responses.
4. VicForests contends it has complied with and will continue to comply with its legal obligations, including on the bases that it has undertaken a precautionary principle analysis and implements adaptive measures in its coupes. We **enclose** a copy of the Statement of Claim, Defence and Reply filed in the proceeding.
5. The trial in the proceeding is listed for October 2020.
6. The matter is also listed for a hearing in the week commencing 3 August 2020 on whether an interlocutory injunction should be granted to prevent VicForests from conducting timber harvesting in 27 coupes prior to the trial.

7. We request a report from you setting out your opinion on questions set out in this letter of instruction. This report is for the purposes of the **interlocutory injunction application**. Your report may be relied upon in the proceeding and, if so, you may be called to give evidence on the matters in your report.
8. Below we set out the facts and assumptions we ask you to make for the purpose of preparing your report, followed by the specific questions we request that you address in your report.
9. If there are further documents that would assist you, please let us know.

### **Facts and assumptions**

#### Species legal status and protection

10. In June 2017, the Greater Glider was listed as threatened under the *Flora and Fauna Guarantee Act 1988* (Vic). Prior to listing, the Victorian Scientific Advisory Committee prepared a final recommendation to list the species under that Act. Please find it **enclosed**.
11. In November 2019, prior to the 2019/2020 bushfires, DELWP published an Action Statement for the Greater Glider. Please find it **enclosed**.
12. In May 2016, Greater Glider was listed as vulnerable under the EPBC Act. Shortly after listing, the Commonwealth Minister for the Environment approved a Conservation Advice for the species under the EPBC Act. Please find it **enclosed**.
13. The Federal Minister for the Environment decided that a Recovery Plan for the Greater Glider is required, however no Recovery Plan has yet been published.

#### The 2019/2020 bushfires

14. Between November 2019 and March 2020, parts of Australia — including parts of Victoria — experienced catastrophic bushfires.
15. From about early 2020, DELWP commenced planning a biodiversity response to the 2019/2020 Bushfires (**State bushfire biodiversity response**). It published a preliminary report on 23 January 2020. A copy of that preliminary report is **enclosed**.
16. The State biodiversity response preliminary report states that (as at the publication date), 38,112ha of the IPAs were within the current fire extent and 10,126ha were within the projected impact area of the 2019/2020 Bushfires (see page 8, Table 2). Please assume this is a reference to the Immediate Protection Areas referred to in the Greater Glider Action Statement.
17. From about early 2020, the Commonwealth Department of Environment and Emergency commenced a wildlife and threatened species bushfire recovery process, including by convening an expert panel (**Commonwealth bushfire biodiversity response**).

18. On 14 March 2020, the Commonwealth Wildlife and Threatened Species Bushfire Recovery Expert Panel published a rapid analysis of the impacts of the 2019/2020 Bushfires on animal species and prioritisation of species for management response. On 20 March 2020, the Expert Panel published a provisional list of species requiring urgent management intervention. Copies of the rapid analysis and provisional list of species are **enclosed**.
19. The State and Commonwealth biodiversity responses in relation to the 2019/2020 Bushfires are not yet complete.
20. The State and Commonwealth reports referred to above list species impacted by the 2019/2020 Bushfires (**fire-affected threatened species**). The fire-affected threatened species include, but are not limited to, the following species which are subject of the proceeding: Greater Glider, Sooty Owl, Powerful Owl, Smoky Mouse, and White-footed Dunnart.
21. On 20 July 2020, a scientific article entitled 'Impact of 2019–2020 mega-fires on Australian fauna habitat' was published in the peer-reviewed journal *Nature Ecology and Evolution*. Some co-authors of this article are members of the Commonwealth Wildlife and Threatened Species Bushfire Recovery Expert Panel. We **enclose** this article and the table.

VicForests conducts timber harvesting in Greater Glider habitat

22. VicForests has continued to conduct timber harvesting in coupes containing the Greater Glider since the 2019/2020 Bushfires.
23. VicForests harvested or plans to harvest the coupes listed in the Annex (**the Coupes**) prior to November 2020.
24. The Annex lists those coupes subject of the interlocutory injunction application in Part 1, those coupes subject of interlocutory injunctions already granted in the proceeding in Part 2, and other coupes containing Greater Gliders which have been logged since the bushfires in Part 3.
25. Greater Gliders have been detected by WOTCH or pursuant to the Forest Protection Survey Program (**FPSP**) in each of the Coupes.
26. Survey results for the Coupes are:
  - (a) summarised in the Annex, including as to detections within the harvest unit (if known); and
  - (b) set out in maps at exhibit numbers referred to in the Annex; and
  - (c) in results tables at exhibits JRM-42, BTN-1, PTM-3, BTN-95 and JRM-76 to the affidavits of WOTCH members.

Please find these exhibits **enclosed**.

27. The FPSP survey results are also available online at the following website by inserting the coupe number: <https://www.forestsandreserves.vic.gov.au/forest-management/forest-protection-survey-program/forest-protection-survey-program>
28. We note that WOTCH did not conduct surveys of the entire coupes, but only parts of the coupes. Please find **enclosed** the affidavits of Mr McKenzie, Mr Nisbet, Mr Marshall and Ms Forster.
29. Please note that five coupes in the Annex do not contain Greater Glider detections and your opinion is not sought in respect of these coupes: Pat's Corner, Crosby, Ezard, Nine Miles High, Facet.

#### VicForests silvicultural systems

30. The coupes are identified on VicForests Timber Release Plan (**TRP**) published on 23 December 2019 with a net and gross harvest area and proposed silviculture method. The coupes are also listed on the TRP published in July 2020, without net harvest areas or the proposed silviculture methods. Please find the TRPs **enclosed**, together with an extract of the TRPs listing only the Coupes in Part 1 of the Annex.
31. Many coupes are listed on the December 2019 TRP as "Adaptive Silviculture". The Annex notes the silviculture method on the coupe plans for the Coupes (where available).
32. On 16 August 2019, VicForests published a Harvesting and Regeneration Systems document describing "adaptive silviculture" methods. Please find it **enclosed**.
33. Since the bushfires, VicForests has prepared a document entitled "Precautionary principle assessment". The Appendix to that document lists "VF adaptive management prescriptions" for the Greater Glider in non-fire affected areas in the second last column (JMG-10). Please find the assessment, together with the appendix, **enclosed**.
34. The Affidavit of Mr Gunn dated 9 July 2020 describes:
  - (a) VicForests' precautionary principle analysis at paragraphs [13]-[41];
  - (b) VicForests' adaptive management measures at paragraphs [44]-[48];
  - (c) The application of those adaptive management measures to five specific coupes (Jokes, Barcelona, Pat's Corner, Highlander and Charmander) at [49]-[66].
35. The Affidavit of Mr Gunn dated 10 July 2020 states that VicForests has taken steps since September 2018 to ascertain whether its adaptive management measures are effective and the preliminary results at paragraph [8].
36. Coupe plans referred to in the Annex are **enclosed**.

### WOTCH videos and photos of timber harvesting by VicForests

37. WOTCH members have observed and recorded by video and/or photo the harvesting in coupes logged since the bushfires which contain detections of Greater Glider. These observations are set out in the Annex with references to the videos and photos, which are also enclosed.

### Office of the Conservation Regulation Precautionary Measures

38. In May 2020, the Office of Conservation Regulator prepared a document titled "Precautionary measures in timber harvesting post the 2019/20 Victorian bushfires" (the **OCR Precautionary Measures**). It includes maps of the highest 20% value habitat for the basket of 34 most severely bushfire-affected species (blue) (p7), and of the highest 20% value habitat for each individual species of the 34 most severely bushfire-affected species (pink) (p9). The OCR Precautionary Measures included advice to postpone logging the former (blue) and avoid logging the latter (pink) where possible.

39. All coupes in the Annex fall within the blue and the pink. We **enclose** the relevant map (BTN-49).

### Experience with and observations of VicForests' operations

40. We understand that in answering the questions set out below you may draw upon your experience in the field, including your observations of VicForests' operations and harvesting methods. Please fully explain any such matters you rely upon (for example, if you draw upon observations made in the past of VicForests' harvesting methods, please explain when and where you made those observations and what they were, and explain how you rely upon them in forming your opinion in answer to the questions set out below).

## **Questions**

### Threats to the species and its habitat

- 1) Please describe the threats to the Greater Glider as a species and what is necessary for the recovery of the species.
- 2) Please describe the impact of timber harvesting on the Greater Glider and its habitat. Please describe:
  - a) The impact in terms of individual members, local populations and the species;
  - b) The impact in respect of both current and future populations and habitat;
  - c) The nature, severity and duration of any such impact;
  - d) The effect of any such impact upon recovery of the species.

### Effects of 2019/2020 Bushfires on Greater Glider

- 3) What impact has the 2019/2020 Bushfires had on Greater Glider and its habitat in Australia?
- 4) Have the 2019/2020 Bushfires changed the relative importance of the populations of Greater Gliders in:
  - a) the Central Highlands; and
  - b) the parts of the North East, Gippsland and East Gippsland RFA areas that did not burn in the Black Summer fires?
- 5) Do you consider that any such populations constitute important populations? In your answer, please explain the characteristics of important populations of Greater Glider.
- 6) Having regard to the 2019/2020 Bushfires, are the actions described on p10-12 of the Conservation Advice sufficient to avoid serious or irreversible damage to, and recover, the species?

### VicForests' existing or adaptive measures

- 7) Having regard to the impact of the 2019/2020 Bushfires on Immediate Protection Areas referred to in the Greater Glider Action Statement, and on the Greater Glider species and its habitat, is the prescription in the Action Statement to  
*"Retain at least 40% of the basal area of eucalypts across each timber harvesting coupe, prioritising live, hollow bearing trees, wherever a density of Greater Gliders equal to or greater than five individuals per spotlight kilometre (or equivalent measure) is identified"*  
a measure that is likely to be effective to avoid serious or irreversible damage to the Greater Glider:
  - (a) in the coupes in the Annex with 5 or more Greater Gliders in a kilometre?
  - (b) if it was applied to the coupes in the Annex with less than 5 Greater Gliders in a kilometre?

Please answer this question having regard to the harvesting that was observed, photographed and filmed in the coupes in the Annex stated to contain 5 or more Greater Gliders in a kilometre.

- 8) Assume that ordinarily about 25% of a coupe harvested by the clearfell or seed tree methods is retained, taken up by SPZ, stream buffers, and habitat retention. Does retention of a further 15% of the coupe (whether by area or dispersed, equating to 40% basal area retained), effectively protect the Greater Glider from the impacts of timber harvesting you identify in response to Q2? Please explain your answer, including by

reference to the harvesting that was observed, photographed and filmed in the coupes in the Annex stated to contain 5 or more Greater Gliders in a kilometre, and your observations of VicForests' operations and harvesting methods (if relevant).

- 9) What level of protection do VicForests' proposed adaptive measures and precautionary principle analysis provide to the Greater Glider when coupes in which the species is detected are harvested by VicForests? Please answer that question by reference to:
  - a) Documents prepared or published by VicForests: the precautionary principle analysis; the measures described in the table at 'Appendix to precautionary principle assessment – non fire affected areas' (JMG-10) – including habitat tree requirements in the Code; and the Harvesting and Regeneration Systems document; coupe plans (where provided);
  - b) Mr Gunn's affidavits;
  - c) The detections of the species in the Coupes and their location by reference to the harvest unit (where stated), summarised in the Annex and shown on maps enclosed;
  - d) the observations of harvesting in the Annex read with the photos and/or videos of harvested coupes referred to and enclosed;
  - e) your experience and observations of VicForests' operations and harvesting methods if relevant;
  - f) all threats to, and the conservation status of, the Greater Glider (including its basis for listing);
  - g) the impact of the bushfires on the species.
- 10) By reference to the matters at 9a-g, are VicForests' proposed adaptive measures in the 'Appendix to precautionary principle assessment – non fire affected areas' (JMG-10) likely to avoid serious or irreversible damage to the Greater Glider species, if applied to harvesting operations in the Coupes with Greater Glider detections in Part 1 and 2 of the Annex?
- 11) On the basis of:
  - a) the descriptions of adaptive measures in Mr Gunn's affidavit and VicForests' documents, and the observations of harvesting with photos and videos in coupes containing Greater Gliders in the Annex (Parts 1-3),
  - b) your experience and observations of VicForests' operations and harvesting methods if relevant, and
  - c) without being provided with any monitoring survey results or reports,

do you consider it likely that VicForests' adaptive measures are "proving effective and the populations [of Greater Glider] are maintained" as stated in Mr Gunn's Second Affidavit at paragraph 8?

- 12) What is the degree of difference in terms of the severity of any impact on, or risk to, Greater Glider from timber harvesting after the bushfires, between:
- a) Adopting the OCR advice and postponing harvesting in the mapped highest 20% value habitat for the 34 most severely bushfire affected species (blue), and avoiding harvesting where possible in the highest 20% value habitat for each individual of the 34 most severely bushfire affected species (pink); versus
  - b) Pursuing harvesting in coupes on the TRP which contain detections of Greater Glider and which are located in the blue and pink, and adopting VicForests adaptive measures as set out in VicForests' 'Appendix to precautionary principle assessment - non fire affected areas' (JMG-10)?

### **Your duty as an expert**

- 41. The manner in which you present the information is a matter for you, provided the material is presented in a form which is clear for the Court. In particular, we would request that your report use paragraph numbering so that relevant passages can be readily identified by the Court.
- 42. Please read the enclosed Expert Witness Code. Please ensure that your report is consistent with the *Expert Witness Code* and contains each of the items identified in paragraph 3 of that Code. In particular, please ensure that your report includes the declaration set out at paragraph 3(i) of the Code. Your report is intended to be relied upon by WOTCH in these proceedings. As such, you should ensure that your report has been prepared in accordance with the Expert Witness Code and that you familiarise yourself with and abide by that Code.
- 43. Please include in your report a description of your qualifications and experience, including any relevant publications or research. It is acceptable for this to be done by way of attaching a current curriculum vitae. In outlining your experience we would request that you detail any particular knowledge, experience or qualifications you have in relation to arboreal mammals.
- 44. Please sign and date your report and convey a scanned copy to us by email. We would also be assisted by receiving any maps and material by USB or dropbox.
- 45. We would be grateful to receive your report by midday on 31 July 2020. If you cannot meet this timeline, please let us know when you expect to provide your report.
- 46. Please contact the writer if you require any further assistance or information for the preparation of your report.



Yours sincerely



Danya Jacobs

**Senior Lawyer**

**Enclosures:**

1. Expert Witness Code of Conduct.
2. (a) Statement of Claim; (b) Defence; (c) Reply;
3. (a) Timber Release Plan – December 2019; (b) Timber Release Plan – July 2020;  
(c) Timber Release Plan extract for subject Coupes;
4. Fauna and Flora Guarantee Scientific Advisory Committee Final recommendation on a nomination for listing *Petauroides volans* Greater Glider, 16 March 2017;
5. Greater Glider Action Statement Nov 2019;
6. Conservation Advice *Petauroides volans* greater glider, Threatened Species Scientific Committee, 25 May 2016;
7. DELWP preliminary report titled "Victoria's bushfire emergency: Biodiversity response and recovery preliminary report – Version 1".
8. Commonwealth Department of Agriculture, Water and the Environment Technical Report: (a) Rapid analysis of the impacts of the bushfires on animal species and prioritisation of species for management response, prepared for the Wildlife and Threatened Species Bushfire Recovery Expert Panel dated 14 March 2020; and (b) Wildlife and Threatened Species Bushfire Recovery Expert Panel Provisional list of species requiring urgent management intervention dated 20 March 2020;
9. Ward, M., et al, 'Impact of 2019–2020 mega-fires on Australian fauna habitat', *Nature Ecology and Evolution*, 20 July 2020
10. The:
  - (a) First Affidavit of Mr McKenzie dated 7 February 2020 (**First McKenzie Affidavit**) with exhibits JRM-3, JRM-6, JRM-9, JRM-12, JRM-15, JRM-17 to JRM-24;
  - (b) Second Affidavit of Mr McKenzie dated 14 February 2020 (**Second McKenzie Affidavit**) with exhibits JRM-26, JRM-28, JRM-30, JRM-36 to JRM-41;
  - (c) Third Affidavit of Mr McKenzie dated 6 July 2020 (**Third McKenzie Affidavit**) with exhibits JRM-42, JRM-46, JRM-51, JRM-62, JRM-64, JRM-69 to JRM-75;

- (d) Fourth Affidavit of Mr McKenzie dated 18 July 2020 (**Fourth McKenzie Affidavit**) with exhibits JRM-76, JRM-77, JRM-80, JRM-85, JRM-92, JRM-110 to JRM-116, JRM-118, JRM-121 to JRM-125;
  - (e) First Affidavit of Mr Nisbet dated 6 July 2020 (**First Nisbet Affidavit**) with exhibits BTN-1, BTN-10, BTN-14, BTN-16, BTN-18A, BTN-21, BTN-25, BTN-28, BTN-29, BTN-30, BTN-32, BTN-33, BTN-34, BTN-36 to BTN-43;
  - (f) Third Affidavit of Mr Nisbet dated 17 July 2020 (**Third Nisbet Affidavit**) with exhibits BTN-50, BTN-53, BTN-56, BTN-59, BTN-68, BTN-70, BTN-76, BTN-78A, BTN-95, BTN-96;
  - (g) First Affidavit of Mr Marshall dated 6 July 2020 (**First Marshall Affidavit**) with exhibits PTM-3, PTM-6, PTM-8, PTM-12, PTM-15, PTM-20, PTM-21A, PTM-23, PTM-26, PTM-28;
  - (h) Second Affidavit of Mr Marshall dated 20 July 2020 (**Second Marshall Affidavit**) with exhibits PTM-32, PTM-34 to PTM-37, PTM-39, PTM-42;
  - (i) First Affidavit of Ms Forster dated 7 February 2020 (**First Forster Affidavit**) with exhibits HSF-3, HSF-7 to HSF-11;
  - (j) Fifth Affidavit of Ms Forster dated 19 July 2020 (**Fifth Forster Affidavit**) with exhibit HSF-53;
  - (k) First Affidavit of Ms Jacobs dated 28 January 2020 (**Fifth Jacobs Affidavit**) with exhibits DJ-55, DJ-67.
11. Harvesting and Regeneration Systems document August 2019;
  12. (a) VicForests 'Precautionary principle assessment' 30 June 2020; (b) Updated 'Appendix to precautionary principle assessment - non fire affected areas' (JMG-10); (c) Adaptive management prescriptions.
  13. Affidavits of Mr Gunn dated 9 and 10 July 2020;
  14. Affidavit of Mr Paul dated 11 February 2020;
  15. OCR Precautionary measures in timber harvesting post the 2019/20 Victorian bushfires
  16. Map showing coupes overlaid with OCR Precautionary Measures Map (BTN-49)
  17. Code of Practice for Timber Production 2014; Management Standards and Procedures for timber harvesting operations in Victoria's State forests 2014

## Annex

### **Part 1: Coupes subject of the interlocutory injunction application in August 2020**

1. In Spraggs area:
  - 1.1 at coupe 297-507-0003 (Sun Downies), WOTCH detected fourteen Greater Gliders in March 2020 (ten within 1 kilometre) and observed hollow-bearing trees,<sup>1</sup> and the FPSP detected twelve Greater Gliders – all are mapped in JRM-46;<sup>2</sup>
  - 1.2 at coupe 297-504-0003 (Jokes), the plaintiff detected seven Greater Gliders in March 2020 and observed hollow-bearing trees<sup>3</sup>, and the FPSP detected eight Greater Gliders and two Sooty Owls – all are mapped in PTM-20.<sup>4</sup> Two of the Greater Gliders detected by the plaintiff and one of the Greater Gliders detected by the FPSP are located in the part of the coupe mapped as the net harvest unit in the coupe plan. The coupe plan is at PTM-21A. It states that the harvesting method is Seed Tree and that 40% of the TRPs [sic] basal area must be retained;<sup>5</sup>
  - 1.3 at coupe 297-507-0002 (Updownies or Spraggs 2), WOTCH detected four Greater Gliders and a Sooty Owl and observed hollow-bearing trees<sup>6</sup>, and the FPSP detected 11 Greater Gliders – all are mapped in PTM-39;<sup>7</sup>
  - 1.4 at coupe 297-517-0001 (Eaves), WOTCH detected a Powerful Owl and a Greater Glider and the FPSP detected four Greater Gliders – all are mapped in PTM-42.<sup>8</sup>
2. In Faith Creek area:
  - 2.1 at coupe 460-510-0038 (Benefactor), WOTCH detected three Greater Gliders and observed hollow-bearing trees<sup>9</sup> in May 2019, and the FPSP detected four Greater Gliders and one Sooty Owl – all are mapped in JRM-51.<sup>10</sup>
3. In Wombat Ridge area:

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<sup>1</sup> Third McKenzie Affidavit, [12]-[20]; exhibits JRM-43-JRM-44.

<sup>2</sup> Third McKenzie Affidavit, [23]-[24]; exhibits JRM-46-JRM-47.

<sup>3</sup> First Marshall Affidavit, [56]-[59]; exhibits PTM-17-PTM-18.

<sup>4</sup> First Marshall Affidavit, [65]; exhibits PTM-20 - PTM-21.

<sup>5</sup> First Marshall Affidavit, [66]; exhibit PTM 21A.

<sup>6</sup> Second Marshall Affidavit, [19-24]; exhibits PTM-38 – PTM-40.

<sup>7</sup> First Nisbet Affidavit, [136(d)]; exhibits BTN-43, BTN-45, BTN-46; Second Marshall Affidavit, [24]; exhibit PTM-39.

First Nisbet Affidavit, [136(e)]; exhibits BTN-43, BTN-45, BTN-46; Second Marshall Affidavit, [25]-[28]; exhibits PTM-41 – PTM-43.

<sup>9</sup> Third McKenzie Affidavit, [25]-[34]; exhibits JRM-48-JRM-49.

<sup>10</sup> Third McKenzie Affidavit, [36]-[37]; exhibits JRM-51-JRM-52.

- 3.1 at coupe 485-508-0005 (Wombat Ridge 5), WOTCH detected one Greater Glider and observed hollow-bearing trees in May 2020 and the FPSP detected one White-footed Dunnart– all detections are mapped at BTN-78A;<sup>11</sup>
- 3.2 at coupe 485-508-0070 (Wombat Ridge 70), WOTCH detected two Greater Gliders and observed hollow-bearing trees during its first survey in early June 2020,<sup>12</sup> and detected three Greater Gliders and observed hollow-bearing trees during its second survey at the coupe in mid-June 2020,<sup>13</sup> and the FPSP detected five Greater Gliders and one Sooty Owl – all detections are mapped in BTN-14;<sup>14</sup>
- 3.3 at coupe 485-507-0014 (Blue Streak), WOTCH detected one Greater Glider in March 2020 and observed hollow bearing trees – this detection is mapped in BTN-10<sup>15</sup>. On 27 May 2020, WOTCH observed and photographed an area of approximately 10ha in the coupe which had been intensively logged with some retained trees scattered throughout the logged area, only a few of which appeared to be large, mature trees likely to contain hollows – these photos are in JRM-73<sup>16</sup>. On 7 June 2020, WOTCH observed and photographed several live and dead felled hollow-bearing trees in the coupe – these photos are in BTN-34.<sup>17</sup> The Greater Glider detected by WOTCH is located in the part of the coupe mapped as the net harvest unit in the coupe plan. The coupe plan is at BTN-36. It states that the harvesting method is Seed Tree and that where habitat 1 trees are located on the map and identified in the field recruitment trees will be retained as a clump.<sup>18</sup>

#### 4. In Big River area:

- 4.1 at coupe 313-503-0002 (Barcelona), WOTCH detected two Greater Gliders during its first survey of the coupe and 11 Greater Gliders during its second survey (nine within 1 kilometre), both in early June 2020, and observed hollow-bearing trees.<sup>19</sup> The FPSP detected 12 Greater Gliders, one Sooty Owl and two White-footed Dunnart at the coupe.<sup>20</sup> All of these WOTCH and FPSP detections are mapped in JRM-62. On 6 and 11 June 2020, WOTCH observed and photographed an area of approximately 2.5ha in the coupe which had been intensively logged with few retained trees, and what appeared to be a very large, mature felled tree with hollows – these photos are in

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<sup>11</sup> Third Nisbet Affidavit at [90]; exhibit BTN-78A.  
<sup>12</sup> Third McKenzie Affidavit at [51]-[56]; exhibits JRM-57-JRM-58.  
<sup>13</sup> First Nisbet Affidavit, [65]-[69]; exhibits BTN-13-BTN-14.  
<sup>14</sup> First Nisbet Affidavit, [70]-[71]; exhibits BTN-14-BTN-15.  
<sup>15</sup> First Nisbet Affidavit, [56]-[61]; exhibits BTN-10-BTN-11.  
<sup>16</sup> Third McKenzie Affidavit, [92]-[96]; exhibit JRM-73.  
<sup>17</sup> First Nisbet Affidavit, [118]; exhibit BTN-34.  
<sup>18</sup> First Nisbet Affidavit, [120]; exhibit BTN-36.  
<sup>19</sup> Third McKenzie Affidavit, [57]- [64]; exhibits JRM-59-JRM-60.  
<sup>20</sup> Third McKenzie Affidavit,[70]-[71]; exhibits JRM-62-JRM-63.

JRM-122 and JRM-74 respectively.<sup>21</sup> On 12 July 2020, WOTCH observed and photographed an area close to where it had detected two Greater Gliders that had been intensively logged, a stump of a hollow-bearing stag and large felled trees with hollow cores – these photos are in JRM-123 (the first two photos in the bundle are of the Greater Glider detection locations, the remainder are the stumps and felled trees with hollow cores).<sup>22</sup> 15 of the Greater Gliders detected by WOTCH and the FPSP, one Sooty Owl detected by FPSP and one White-footed Dunnart detected by the FPSP are located within the part of the coupe mapped as the net harvest unit in the coupe plan. Another four Greater Gliders detected by WOTCH and the FPSP are bordering the harvest unit. The coupe plan is JRM-75. It states that the harvesting method is Variable retention 1 and Seed Tree, that a minimum 40% of the pre harvest basal area across the gross area will be retained, and Type 1, 2 and 3 habitat trees<sup>23</sup> have been identified and will be retained where safe to do so;<sup>24</sup>

4.2 at coupe 313-503-0009 (Big River 9), the FPSP detected five Greater Gliders – all mapped in BTN-43 (pdf p.9).<sup>25</sup>

5. In Big Pat's Creek area:

5.1 at coupe 345-511-0004 (Pat's Corner), WOTCH detected two Sooty Owls in April 2020 – mapped in JRM-64.<sup>26</sup> On 21 June 2020, WOTCH observed and photographed an area of about 5ha in the coupe which had been intensively harvested, with few retained trees and which were isolated from one another and did not appear to be large, mature trees likely to contain hollows – these photos are in JRM-69.<sup>27</sup> The Sooty Owls detected by WOTCH are located within the part of the coupe mapped as the net harvest unit in the coupe plan. The coupe plan is at JRM-70 and states that the harvesting method is clearfelling.<sup>28</sup>

6. In Thompson River area:

6.1 at coupe 481-508-0008 (Tense), WOTCH detected two Greater Gliders and observed hollow-bearing trees during its first survey of the coupe in April 2020,<sup>29</sup> and detected

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<sup>21</sup> Third McKenzie Affidavit, [97]-[100]; exhibit JRM-74. Fourth McKenzie Affidavit, [94]; exhibit JRM-122.

<sup>22</sup> Fourth McKenzie Affidavit, [95]-[97]; exhibit JRM-123.

<sup>23</sup> Type 1, 2 and 3 habitat trees are defined in the Paul Affidavit at [127]: **Type 1:** live, large hollow bearing trees that are senescing (mature to over mature); **Type 2 (dead):** dead trees with hollows; **Type 2 (alive):** early mature and advanced regrowth trees that have hollows or that are highly (>80%) likely to have hollows based on their growth form and girth; **Type 3:** trees with small hollows, defects or injuries that are likely to lead to the development of hollows.

<sup>24</sup> Third McKenzie Affidavit, [101]. JRM-75.

<sup>25</sup> First Nisbet Affidavit, [136(f)]; exhibits BTN-43, BTN-45, BTN-46.

<sup>26</sup> Third McKenzie Affidavit, [72]-[75]; exhibits JRM-64-JRM-65.

<sup>27</sup> Third McKenzie, [81]-[85]; exhibit JRM-69.

<sup>28</sup> Third McKenzie, [86]; exhibit JRM-70.

<sup>29</sup> First Nisbet Affidavit, [34]-[40]; exhibits BTN-2-BTN-3.

one Greater Glider and observed hollow-bearing trees during its second survey of the coupe in May 2020.<sup>30</sup> The FPSP detected five Sooty Owl at the coupe. All of these WOTCH and FPSP detections are mapped in BTN-78A.<sup>31</sup> On 1 June 2020, WOTCH observed and photographed an area of about 7ha in the coupe which had been intensively logged with very few retained trees scattered throughout the coupe, and the stump of a very large felled tree that appeared likely to have had hollows – these photos are in JRM-71.<sup>32</sup> Two of the Greater Gliders detected by WOTCH are located within the part of the coupe mapped as the net harvest unit in the coupe plan. The coupe plan is at JRM-72 and states that the harvesting method is Seed Tree and Variable retention 2 and all HBT 1 trees will be retained.<sup>33</sup>

7. In Tyers area:

7.1 at coupe 490-504-0004 (Highlander), WOTCH detected five Greater Gliders within 1 kilometre and observed hollow-bearing trees in March 2020 – all detections are mapped in BTN-16;<sup>34</sup> The four Greater Gliders detected by WOTCH within the coupe are located within the part of the coupe mapped as the net harvest unit in the coupe plan. The coupe plan is at BTN-18A and states that the harvesting method is Seed Tree and HBT 1 trees identified are to be retained with 2 additional recruitment trees.<sup>35</sup>

8. In Loch Valley area:

8.1 at coupe 462-511-0013 (Loch Valley 13), WOTCH detected one Greater Glider and observed hollow-bearing trees during its first survey in April 2020,<sup>36</sup> and detected four Greater Gliders and observed hollow-bearing trees during its second survey at the coupe in June 2020 – all detections are mapped in BTN-21;<sup>37</sup>

8.2 at coupe 462-508-0007 (Myrrh), WOTCH detected eight Greater Gliders (more than five within 1 kilometre) and observed hollow-bearing trees in March 2020,<sup>38</sup> and the FPSP detected 15 Greater Gliders at the coupe.<sup>39</sup> All of these WOTCH and FPSP detections are mapped in BTN-25. On 21 June 2020, WOTCH observed, filmed and photographed a logged area of about 4-5ha in the coupe, three small habitat islands and approximately 10-20 isolated retained trees – the photos and videos are in BTN-

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<sup>30</sup> First Nisbet Affidavit, [44]-[50]; exhibits BTN-5-BTN-6.

<sup>31</sup> Third Nisbet Affidavit, [90]; exhibit BTN-78A.

<sup>32</sup> Third McKenzie Affidavit, [87]-[90]; exhibit JRM-71.

<sup>33</sup> Third McKenzie, [91]; exhibit JRM-72.

<sup>34</sup> First Nisbet Affidavit, [72]-[78]; exhibits BTN-16-BTN-17.

<sup>35</sup> First Nisbet Affidavit [82]; exhibit BTN-18A.

<sup>36</sup> First Nisbet Affidavit, [83]-[87]; exhibits BTN-19, BTN-21.

<sup>37</sup> First Nisbet Affidavit, [88]-[93]; exhibits BTN-20, BTN-21.

<sup>38</sup> First Nisbet Affidavit, [94]-[101]; exhibits BTN-22-BTN-23.

<sup>39</sup> First Nisbet Affidavit, [105]-[106]; exhibits BTN-25-BTN-26.

39.<sup>40</sup> WOTCH also observed, filmed and photographed several felled large hollow-bearing trees, including one marked "H", and a clear-felled area at, and surrounding, the location it had detected Greater Gliders in March 2020 – these photos and videos are also in BTN-39;<sup>41</sup> The six Greater Gliders detected by WOTCH within the coupe are located within the part of the coupe mapped as the net harvest unit in the coupe plan or bordering retention islands. The coupe plan is at BTN-40 and states that the harvesting method is Seed Tree and Regrowth Retention Harvesting.<sup>42</sup>

8.1 at coupe 462-508-0006 (Frankincense), WOTCH detected four Greater Gliders and observed hollow-bearing trees in early June 2020,<sup>43</sup> and the FPSP detected three Greater Gliders and one Sooty Owl.<sup>44</sup> The WOTCH detections and two of the FPSP detections are mapped in PTM-23. On 21 June 2020, WOTCH observed a logged area within the coupe of approximately 3ha and no habitat islands in the coupe. WOTCH also observed and photographed in the coupe one large cut stump that appeared to be from a hollow bearing tree, one felled hollow bearing tree and one large hollow bearing tree that had been uprooted and pushed over – these photos are at BTN-37;<sup>45</sup> The two Greater Gliders detected by WOTCH within the coupe, and the Sooty Owl and two Greater Gliders recorded by FPSP within the coupe, are all within the net harvest unit in the coupe plan or bordering retention islands. The coupe plan is at BTN-38 and states that the harvesting method is Seed Tree and that all large hollow bearing trees were marked for retention either as single habitat trees or in habitat islands.<sup>46</sup>

9. In Black Range Area:

9.1 at coupe 282-506-0011 (Fizzer), WOTCH detected one Greater Glider and observed hollow-bearing trees during its first survey in May 2020,<sup>47</sup> and detected three Greater Gliders and observed hollow-bearing trees during its second survey in June 2020 – all are mapped in PTM-6;<sup>48</sup>

9.2 at coupe 282-507-0003 (Sky Diver), WOTCH detected one Greater and observed hollow-bearing trees in June 2020,<sup>49</sup> and the FPSP detected two Powerful Owls and two Greater Gliders – all are mapped in PTM-8;<sup>50</sup>

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<sup>40</sup> First Nisbet Affidavit, [125]; exhibit BTN-39.

<sup>41</sup> First Nisbet Affidavit, [126]-[127]; exhibit BTN-39.

<sup>42</sup> First Nisbet Affidavit, [128]; exhibit BTN-40.

<sup>43</sup> First Marshall Affidavit, [67]-[70]; exhibits PTM-22-PTM-23.

<sup>44</sup> First Marshall Affidavit, [71]-[72]; exhibits PTM-23-PTM-24.

<sup>45</sup> First Nisbet Affidavit, [121]-[123]; exhibit BTN-37.

<sup>46</sup> First Nisbet Affidavit, [124]; exhibit BTN-38.

<sup>47</sup> First Marshall Affidavit, [29]-[32]; exhibits PTM-4, PTM-6.

<sup>48</sup> First Marshall Affidavit, [33]-[36]; exhibits PTM-5-PTM-6.

<sup>49</sup> First Marshall Affidavit, [37]-[40]; exhibits PTM-7-PTM-8.

<sup>50</sup> First Marshall Affidavit, [41]; exhibit PTM-9.

- 9.3 at coupe 282-511-0007 (Squirtle), WOTCH detected two Greater Gliders and observed hollow-bearing trees during its first survey,<sup>51</sup> and detected five Greater Gliders and observed hollow-bearing trees during its second survey at the coupe,<sup>52</sup> both in June 2020. The FPSP detected four Greater Gliders at the coupe. All of these WOTCH and FPSP detections are mapped in PTM-12;<sup>53</sup>
- 9.4 at coupe 282-512-0013 (Vicuna), WOTCH detected two Greater Gliders and observed hollow-bearing trees in May 2020.<sup>54</sup> The FPSP detected seven Greater Gliders at the coupe. All of these WOTCH and FPSP detections are mapped in PTM-15;<sup>55</sup>
- 9.5 at coupe 281-514-0008 (Thinker), the FPSP detected 12 Greater Gliders – all are mapped in BTN-43 (pdf p.2);<sup>56</sup>
- 9.6 at coupe 282-512-0007 (Charmander), the FPSP detected five Greater Gliders – all are mapped in BTN-43 (pdf p.3).<sup>57</sup>
10. In Mount Torbreck area:
- 10.1 at coupe 289-504-0005 (DonToo PCL), WOTCH detected 10 Greater Gliders and observed hollow-bearing trees in June 2020,<sup>58</sup> and the FPSP detected six Greater Gliders – all are mapped in PTM-26;<sup>59</sup>
- 10.2 at coupe 289-504-0010 (Triple Don), the FPSP detected 10 Greater Gliders (more than 5 in 1 kilometre) – all are mapped in BTN-43 (pdf p.5);<sup>60</sup>. On 22 June 2020, WOTCH observed and photographed at the coupe large hollowed out cut stumps and large felled or pushed over trees – these photos are in JRM-110.<sup>61</sup> Eight of the Greater Gliders detected by the FPSP within Triple Don are located within the net harvest area as mapped in the coupe plan, and another two Greater Gliders border the net harvest area. The coupe plan is at JRM-111. It states that the harvest method is Group (or Gap) Selection and that more than 40% of the basal area will be retained, and to retain all Habitat Class One Trees, priorities [sic] retaining of hollow bearing trees.<sup>62</sup>
11. In Murrindindi River area:

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<sup>51</sup> First Marshall Affidavit, [42]-[45]; exhibits PTM-10, PTM-12.

<sup>52</sup> First Marshall Affidavit, [46]-[50]; exhibits PTM-11-PTM-12.

<sup>53</sup> First Marshall Affidavit, [49]-[50]; exhibits PTM-12-PTM-13.

<sup>54</sup> First Marshall Affidavit, [51]-[54]; exhibits PTM-14-PTM-15.

<sup>55</sup> First Marshall Affidavit, [55]; exhibit PTM-15-PTM-16.

<sup>56</sup> First Nisbet Affidavit, [136(a)]; exhibits BTN-43, BTN-45, BTN-46.

<sup>57</sup> First Nisbet Affidavit, [136(b)]; exhibits BTN-43, BTN-45, BTN-46.

<sup>58</sup> First Marshall Affidavit, [73]-[76]; exhibits PTM-25-PTM-26.

<sup>59</sup> First Marshall Affidavit, [76]; exhibit PTM-26.

<sup>60</sup> First Nisbet Affidavit, [136(c)]; exhibits BTN-43, BTN-45, BTN-46; Fourth McKenzie Affidavit [79].

<sup>61</sup> Fourth McKenzie Affidavit, [77]-[78]; exhibit JRM-110.

<sup>62</sup> Fourth McKenzie Affidavit, [80]; exhibit JRM-111.



11.1 at coupe 300-503-0008 (Bungalow), WOTCH detected one Greater Glider and observed hollow-bearing trees in March 2020,<sup>63</sup> and the FPSP detected one Sooty Owl - all are mapped in PTM-28.<sup>64</sup>

12. In Little Yarra area:

12.1 at coupe 347-513-0003 (Boys Camp), the FPSP detected three Greater Gliders – all are mapped in BTN-43 (pdf p.10).<sup>65</sup>

13. In Snobs Creek Area:

13.1 at coupe 288-511-0005 (Magnum PI), the FPSP detected one Greater Glider in the coupe and one Greater Glider approximately 400m outside the coupe – mapped in BTN-43 (pdf p.4).<sup>66</sup>

14. In Mount Disappointment area:

14.1 at coupe 301-542-0001 (Crosby), the FPSP detected one Powerful Owl – mapped in BTN-43 (pdf p.8).<sup>67</sup>

## **Part 2: Coupes subject of earlier interlocutory injunctions granted in 2020**

15. In Mount Disappointment area:

15.1 At 298-516-0002 (Brumby), WOTCH observed hollow-bearing trees and detected fifteen Greater Gliders on 27-28 December 2017, and four Greater Gliders on 28-29 December 2017<sup>68</sup> - mapped in JRM-3;

15.2 At 298-516-0003 (Pony), WOTCH observed hollow-bearing trees and detected nine Greater Gliders on 28-29 December 2017 - mapped in JRM-3<sup>69</sup>, and seven Greater Glider on 14-15 January 2020 in Pony coupe – mapped in HSF-3.<sup>70</sup> WOTCH took photographs of the part-logged coupe on 27 January 2020 – JRM-18.<sup>71</sup> VicForests says type 1 and 2 habitat trees will be retained in Pony where they occur, WOTCH observed and photographed a dead hollow-bearing tree with hollows (type 2) pushed over in the coupe on 14 February 2020 – JRM-36.<sup>72</sup>

16. In the Mount Bride/Big Pat's Creek area:

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<sup>63</sup> First Marshall Affidavit, [77]-[81]; exhibits PTM-27-PTM-28.

<sup>64</sup> First Marshall Affidavit, [81-82]; exhibits PTM-28-PTM-29.

<sup>65</sup> First Nisbet Affidavit, [136(g)]; exhibits BTN-43, BTN-45, BTN-46.

<sup>66</sup> First Nisbet Affidavit, [136(h)]; exhibits BTN-43, BTN-45, BTN-46.

<sup>67</sup> First Nisbet Affidavit, [136(i)]; exhibits BTN-43, BTN-45, BTN-46.

<sup>68</sup> First McKenzie Affidavit [32]-[44], [82], Detection Report JRM-3.

<sup>69</sup> First McKenzie Affidavit [32]-[44], [82], Detection Report incl map JRM-3.

<sup>70</sup> First Forster Affidavit [18]-[28], [53], Detection Report incl map HSF-3.

<sup>71</sup> First McKenzie Affidavit [83], photographs JRM-18.

<sup>72</sup> Second McKenzie Affidavit [33]-[34], JRM-36.

- 16.1 at 345-528-0001 (Apu) coupe, WOTCH observed hollow-bearing trees and detected one Greater Glider in January 2020 – mapped in JRM-17.<sup>73</sup>
- 16.2 At 345-508-0062 (Ezard), WOTCH detected one Sooty Owl in March 2020 – mapped in BTN-50.<sup>74</sup>
17. In the Castella area
- 17.1 At 297-501-0006 (Castella East) coupe, WOTCH observed hollow-bearing trees and detected nine Greater Gliders in December 2018 – mapped in JRM-6.<sup>75</sup>
18. In the Upper Thomson area:
- 18.1 At 458-501-0010 (Rock a Rhyme), WOTCH observed hollow-bearing trees and detected three Greater Gliders in January 2020 – mapped in JRM-15.<sup>76</sup> WOTCH photographed the coupe on 23 January 2020 – JRM-21.<sup>77</sup> VicForests says that mature Grey Gums will be retained throughout the coupe (where practicable and safe to do so), habitat islands will be retained and habitat trees will be retained.<sup>78</sup> On 2 February 2020, WOTCH observed and photographed a logged area of approximately 5ha with one retained tree – JRM-39.<sup>79</sup>
19. In the LaTrobe area:
- 19.1 At 349-502-0014 (LaTrobe) coupe, FPSP detected two greater gliders and five sooty owls in October and November 2018 – mapped in DJ-67.<sup>80</sup> WOTCH photographed the coupe on 23 January 2020 – JRM-22.<sup>81</sup>
20. In the Learmonth Creek area:
- 20.1 At 347-518-0005 (Dowse) coupe, WOTCH observed hollow-bearing trees and detected ten Greater Gliders in January 2020 – mapped in HSF-7.<sup>82</sup> WOTCH photographed the coupe on 23 January 2020 – JRM-23.<sup>83</sup> VicForests says Type 1 and Type 2 habitat trees will be retained where they occur, and for each Type 1 and Type 2 habitat tree, an additional two recruitment habitat trees are also retained in this

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<sup>73</sup> First McKenzie Affidavit [77]-[81], [82], map JRM-17.

<sup>74</sup> Third Nisbet Affidavit [20]-[27], BTN-50.

<sup>75</sup> First McKenzie Affidavit [47]-[53], [82], map JRM-6.

<sup>76</sup> First McKenzie Affidavit [68]-[75], [82], map JRM-15

<sup>77</sup> First McKenzie Affidavit [89], photos JRM-21.

<sup>78</sup> Paul Affidavit [175]-[177].

<sup>79</sup> Second McKenzie Affidavit [43]-[48], JRM-39.

<sup>80</sup> FPSP results table, DJ-66; map of FPSP results, DJ-67.

<sup>81</sup> First McKenzie Affidavit [90], photos JRM-22.

<sup>82</sup> First Forster Affidavit [47]-[53], map HSF-7.

<sup>83</sup> First McKenzie Affidavit [93], photos JRM-23.

coupe.<sup>84</sup> WOTCH observed and photographed a two logged areas in the coupe of approximately 1-2ha and 2-3ha respectively with no retained trees.<sup>85</sup>

21. In the Mount Klondyke area:

21.1 At (298-504-0001) Propellor coupe, WOTCH detected nine Greater Gliders (mapped in JRM-30),<sup>86</sup> and FPSP detected 26 greater gliders – mapped in DJ-55.<sup>87</sup> WOTCH photographed the coupe on 27 January 2020 – JRM-19.<sup>88</sup> VicForests says type 1, 2 and 3 habitat trees have been marked and will be retained where safe to do so in the coupe, WOTCH observed and photographed a dead tree with hollows (type 2) pushed over in the coupe on 14 February 2020 – JRM-38.<sup>89</sup>

22. In the Big River area:

22.1 At 312-510-0012 (Kumba) coupe, WOTCH observed hollow-bearing trees and detected four Greater Gliders - mapped in JRM-9, p7.<sup>90</sup> The FPSP detected eleven greater gliders, two powerful owl, one sooty owl and one smoky mouse at the coupe – mapped in JRM-12.<sup>91</sup> WOTCH photographed the coupe on 27 January 2020 – JRM-20.<sup>92</sup> VicForests says type 1 and 2 habitat trees will be retained in Kumba where they occur, WOTCH observed and photographed a large tree likely to have hollows pushed over in the coupe on 18 January 2020 – JRM-37.<sup>93</sup>

22.2 At 312-510-0011 (Pumba) coupe, WOTCH detected three Greater Glider (mapped in JRM-28),<sup>94</sup> and FPSP detected ten greater gliders and a sooty owl between October 2018 and October 2019 – mapped in HSF-9.<sup>95</sup>

22.3 At 312-510-0010 (Rumba) coupe, WOTCH detected six Greater Gliders (mapped in JRM-26),<sup>96</sup> and FPSP detected six greater gliders, five sooty owl and three powerful owl between August and October 2019 – mapped in HSF-8.<sup>97</sup>

23. In the Timbertop area (west of Mt Buller, outside the Central Highlands):

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<sup>84</sup> Paul Affidavit [194].

<sup>85</sup> Second McKenzie Affidavit [53]-[57], JRM-41.

<sup>86</sup> Second McKenzie Affidavit [12]-[15], JRM-30.

<sup>87</sup> FPSP results table, DJ-54; map of FPSP results DJ-55.

<sup>88</sup> First McKenzie Affidavit [85], photos JRM-19.

<sup>89</sup> Second McKenzie Affidavit [38]-[39], JRM-38.

<sup>90</sup> First McKenzie Affidavit [56]-[64], [82], detection report incl map JRM-9.

<sup>91</sup> FPSP results table DJ-62; map of FPSP results JRM-12.

<sup>92</sup> First McKenzie Affidavit [87], photos JRM-20.

<sup>93</sup> Second McKenzie Affidavit [35]-[37], JRM-37.

<sup>94</sup> Second McKenzie Affidavit [8]-[11], map JRM-28.

<sup>95</sup> FPSP results table DJ-85; map of FPSP results HSF-9.

<sup>96</sup> Second McKenzie Affidavit, map JRM-26 .

<sup>97</sup> FPSP results table DJ-83; map of FPSP results HSF-8.

- 23.1 At 388-505-0004 Princess Di coupe, FPSP detected two Greater Gliders and a Masked owl as part of the FPSP in December 2018 – mapped in HSF-11<sup>98</sup>. WOTCH observed and photographed a logged area of approximately 20ha with few retained trees on 9 February 2020 - JRM-40.<sup>99</sup>
- 23.2 At 388-505-0002 Wales coupe, FPSP detected three greater gliders and a Masked owl as part of the FPSP in November and December 2018 – mapped in HSF-10<sup>100</sup>. WOTCH photographed the coupe on 5 February 2020 – JRM-24.<sup>101</sup>
- 23.3 At coupe, 388-505-0005 (Ruprecht), FPSP detected five greater gliders in February 2020 – mapped in BTN-76.<sup>102</sup>
24. In the Baw Baw area:
- 24.1 At 457-508-0004 (Fergana) coupe, WOTCH observed hollow-bearing trees and detected six Greater Gliders in March 2020 – mapped in JRM-77.<sup>103</sup>
25. In the Triangle area:
- 25.1 At 320-502-0047 (Stimpy) coupe, WOTCH observed hollow-bearing trees and detected two Greater Gliders in March 2020 – mapped in BTN-53.<sup>104</sup>
- 25.2 At 457-501-0032 (Nine Miles High) coupe, WOTCH detected a Sooty Owl in March 2020 – mapped in BTN-56.<sup>105</sup>
26. In the Powelltown area:
- 26.1 At 349-511-0015 (Magellan) coupe, WOTCH observed hollow-bearing trees and detected two Greater Gliders in March 2020, and FPSP detected one Greater Glider – mapped in BTN-59.<sup>106</sup>
- 26.2 At 349-515-0007 (Wanderlust) coupe, WOTCH observed hollow-bearing trees and detected five Greater Gliders and a Powerful owl in March 2020, and FPSP detected twelve Greater Gliders and one Sooty Owl – mapped in BTN-68.<sup>107</sup>
27. In the Matlock area:

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<sup>98</sup> FPSP results table DJ-89; map of FPSP results HSF-11

<sup>99</sup> Second McKenzie Affidavit [49]-[52], JRM-40

<sup>100</sup> FPSP results table DJ-88; map of FPSP results HSF-10

<sup>101</sup> First McKenzie Affidavit [96], photos JRM-24

<sup>102</sup> FPSP results table BTN-77; map of FPSP results BTN-76

<sup>103</sup> Fourth McKenzie Affidavit [21]-[29], map JRM-77

<sup>104</sup> Third Nisbet Affidavit [31]-[38], map BTN-53

<sup>105</sup> Third Nisbet Affidavit [41]-[45], map BTN-56

<sup>106</sup> Third Nisbet Affidavit [31]-[59], FPSP results table BTN-62, map BTN-59

<sup>107</sup> Third Nisbet Affidavit [60]-[75], FPSP results table BTN-69, map BTN-68

- 27.1 At 492-501-0001 (Facet) coupe, WOTCH observed hollow-bearing trees and detected two Sooty Owls in March 2020 – mapped in BTN-70.<sup>108</sup>
- 27.2 At 318-512-0028 (Tenderloin) coupe, FPSP detected two Greater Gliders and two Powerful owls – mapped in BTN-76.<sup>109</sup>
- 27.3 At 318-512-0011 (Monster) coupe, FPSP detected three Greater Gliders and three Sooty Owls – mapped in BTN-76.<sup>110</sup>
28. In the Mt Bullfight area:
- 28.1 At 312-503-0004 (Bauble) coupe, WOTCH detected eight Greater Gliders, including five within a kilometer – mapped in JRM-80.<sup>111</sup>
29. In the Noojee area:
- 29.1 At 463-505-0012 (Turkey Feet) coupe, WOTCH observed hollow-bearing trees and detected eight Greater Gliders on 16-17 February 2020, more than five of which were within a kilometer – mapped in JRM-85.<sup>112</sup> On 29 February 2020, WOTCH observed and photographed a logged area within the coupe of approximately 6ha with only one retained tree in the centre of the clearfell and no vegetation retained around it. WOTCH also observed and photographed three large, hollow-bearing dead trees that were cut or pushed over – BTN-32.<sup>113</sup> All seven of the Greater Gliders detected by WOTCH are located in the part of the coupe mapped as the net harvest unit in the coupe plan. The coupe plan is at BTN-33 and states it is to be harvested by the clearfelling and 2 additional recruitment trees are to be retained for each identified HBT 1 tree.<sup>114</sup>
30. In the Kalatha area:
- 30.1 At 298-515-0001 (Whopper/Zinger) coupe, WOTCH observed hollow-bearing trees and detected seven Greater Gliders, including five within a kilometer – mapped in HSF-53.<sup>115</sup>

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<sup>108</sup> Third Nisbet Affidavit [76]-[81], map BTN-70

<sup>109</sup> FPSP results table BTN-77; map of FPSP results BTN-76

<sup>110</sup> FPSP results table BTN-77; map of FPSP results BTN-76

<sup>111</sup> Fourth McKenzie Affidavit [32]-[42], map JRM-80

<sup>112</sup> Fourth McKenzie Affidavit [46]-[54], map JRM-85

<sup>113</sup> First Nisbet Affidavit [112]-[114], photos BTN-32

<sup>114</sup> First Nisbet Affidavit [115]-[116], coupe plan BTN-33

<sup>115</sup> Fifth Forster Affidavit [6]-[15], [31], map HSF-53

### **Part 3: Other coupes containing detections of Greater Glider logged since the bushfires**

#### 31. In the LaTrobe area:

31.1 At coupe 349-515-0001 (Even Steven), WOTCH detected two Greater Gliders in January 2020<sup>116</sup> and FPSP detected four Greater Gliders in August – September 2019<sup>117</sup>. On 19 May 2020, WOTCH observed and photographed a logged area within the coupe of approximately 25ha which had been intensively logged with some retained trees scattered with no vegetation surrounding them, many of which appeared likely to contain hollows – JRM-113. In May and July 2020, WOTCH also observed and photographed a felled, very large tree likely to have hollows, and a large hollowed out cut stump with a very large hollowed tree felled next to it – JRM-114 and JRM-115.<sup>118</sup> The two Greater Gliders detected by WOTCH and are located in a part of the coupe mapped as retained, however WOTCH observed that area as logged including the stump in the photograph at JRM-115.<sup>119</sup> The coupe plan is JRM-118, it states the coupe is to be logged by seed tree retention.

31.2 At coupe 349-503-0014 (Jolimont) coupe, WOTCH detected three Greater Gliders in January 2020 – mapped in BTN-30.<sup>120</sup> On 28-28 February 2020, WOTCH observed and photographed a recently clearfelled area of approximately 11ha with sparse tree retention and two Greater Gliders on its edge, a large tree of wide girth pushed over and a large stump, both appeared likely to have contained hollows – BTN-28.<sup>121</sup> The three Greater Gliders first detected by WOTCH border the area mapped as the harvest unit in the coupe plan.<sup>122</sup> The coupe plan is at BTN-29 and states on the operations map that the coupe is to be logged by seed tree retention and additional hollow-bearing trees >150cm DBH that contain 1 or more hollows to be retained within 75m of boundary where practicable.<sup>123</sup>

#### 32. In the Snobs Creek area:

32.1 At coupe 288-509-0004 (Chainlink), WOTCH detected one Greater Glider in March 2020. On 22 June 2020 WOTCH observed, filmed and photographed a logged area within the coupe of 2 ha i which had been intensively logged with no retained trees – JRM-121.<sup>124</sup>

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<sup>116</sup> Fourth McKenzie Affidavit [89], map JRM-116

<sup>117</sup> Fourth McKenzie Affidavit [82], FPSP results table JRM-112

<sup>118</sup> Fourth McKenzie Affidavit [81]-[88], photos JRM-113, JRM-114, JRM-115

<sup>119</sup> Fourth McKenzie Affidavit [90]

<sup>120</sup> First Nisbet Affidavit [116], map BTN-30

<sup>121</sup> First Nisbet Affidavit [107]-[109], photos BTN-28

<sup>122</sup> First Nisbet Affidavit [111], maps BTN-29, BTN-30

<sup>123</sup> First Nisbet Affidavit [111], BTN-29

<sup>124</sup> Fourth McKenzie Affidavit [91]-[93], JRM-119, JRM-121; Fifth Forster Affidavit [27]-[28].

33. In the Icy Creek area:

33.1 At coupe 461-503-0006 (Glanworth), FPSP detected six Greater Gliders (more than 5 within 1 kilometre), one Powerful Owl, two Sooty Owls and one Smoky Mouse.<sup>125</sup> On 21 June 2020, WOTCH observed, photographed and filmed a logged area of approximately 10ha with approximately 15 trees standing, a felled live hollow-bearing tree and about 7 pushed over dead hollow-bearing trees, including the at detection locations of the Sooty Owl and Smoky Mouse – BTN-41.<sup>126</sup> On 13 July 2020, WOTCH observed and photographed a large recently clearfelled area with few retained trees, most of which were small and skinny, and two large pushed over and destroyed dead hollow-bearing trees – JRM-124. The coupe plan is at JRM-125 and states the coupe is to be logged by seed tree retention, and to prioritise the largest diameter trees with large visible hollows for retention as habitat trees where possible where they exist. The coupe plans states that Greater Gliders are recorded in the central/eastern part of the coupe, and the operations map and WOTCH observations of the coupe show the central and eastern part of the coupe as intensively logged. WOTCH also observed a stream buffer on the operations map as logged.<sup>127</sup>

34. In the Murrindindi area,

34.1 At coupe 298-512-0002 (Mr Ed) coupe, WOTCH detected a Sooty Owl nest in August 2019 – mapped in JRM-92.<sup>128</sup> On 11 July 2020, WOTCH observed and filmed a clear-felled area of approximately 10-12ha, which extended to within 110m of the Sooty Owl nest and had no retained hollow-bearing trees – BTN-96.<sup>129</sup>

34.1 At coupe 298-510-0006 (Shetland Carriage), WOTCH observed hollow-bearing trees and detected two Greater Gliders in February 2020, and FPSP detected twelve Greater Gliders in January 2020 (more than 5 in 1 kilometre) – mapped in PTM-32<sup>130</sup>. On 7 June 2020, WOTCH observed and photographed a logged area of approximately 3-4ha with two retention islands. One retention island was 0.1ha with no hollow-bearing trees, in a part of the coupe where WOTCH had previously observed 5 hollow-bearing trees which were no longer standing.<sup>131</sup> The other retention island was 0.06ha with thin, young trees and one stag – filmed in PTM-34 entering the frame from 4 seconds and in the centre of the frame from 7-9 seconds.<sup>132</sup> WOTCH also observed and photographed around six cut, large, hollow stumps – PTM-35 (the sixth photograph

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<sup>125</sup> Fourth McKenzie Affidavit [99], BTN-42;

<sup>126</sup> First Nisbet Affidavit [129]-[131], BTN-41

<sup>127</sup> Fourth McKenzie Affidavit [100], JRM-125

<sup>128</sup> Fourth McKenzie Affidavit [64], map JRM-92

<sup>129</sup> Third Nisbet Affidavit [100], video BTN-96

<sup>130</sup> Second Marshall Affidavit [4]-[6], map PTM-33, FPSP results table PTM-32

<sup>131</sup> Second Marshall Affidavit [8c]

<sup>132</sup> Second Marshall Affidavit [8d], [9]-[10], PTM-34

in this bundle shows the 0.06ha retention island beside the stump).<sup>133</sup> On 11 July 2020, WOTCH observed an area logged outside the net harvest unit mapped in the coupe plan, which was located beside three Greater Glider detections.<sup>134</sup> On the coupe plan map, four of the Greater Glider detections are located in the 0.1ha retention island with no hollow-bearing trees, and two of the Greater Glider detections are located in the 0.06ha retention island filmed in PTM-34.<sup>135</sup> The coupe plan states the coupe is to be logged by variable retention 1, to retain 46% of the basal area of eucalypts, several Type 1 and 2 habitat trees have been marked and will be retained, and retention islands will be used to maintain connectivity with the surrounding forest, protect type 1 habitat trees and species observations – it is PTM-37.

Note: Detections at the coupes in this Annex are located within, bordering and adjacent to those coupes, refer to maps for precise detection locations.

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<sup>133</sup> Second Marshall Affidavit [11], photos PTM-35

<sup>134</sup> Second Marshall Affidavit [12], photos PTM-36

<sup>135</sup> Second Marshall Affidavit [13], coupe plan PTM-37, detection map PTM-32