

FOREST MANAGEMENT PLAN
FOR THE
EAST GIPPSLAND FOREST MANAGEMENT AREA

Department of Conservation and Natural Resources
December 1995

© Crown (Government of Victoria) 1995

Published by the Department of Conservation and Natural Resources
240 Victoria Parade, East Melbourne 3002

This publication is copyright. Apart from any fair dealing for private study, research, criticism or review as permitted under the *Copyright Act* 1968, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, photocopying or otherwise, without prior permission of the copyright owner.

This publication should be referenced as:

Victoria. Dept. of Conservation and Natural Resources.
Forest management plan for the East Gippsland forest
management area.

Bibliography.

ISBN 0 7306 6131 8.

1. Forest management - Environmental aspects - Victoria-Gippsland. 2. Forest conservation - Victoria - Gippsland.
3. Forest ecology - Victoria - Gippsland. 4. Biological
diversity conservation - Victoria - Gippsland. I. Title.

333.7516099456

Printed by Gill Miller Press

FOREWORD

The forests of East Gippsland are renowned for their diversity of native plants and animals and, together with the unspoilt rivers and coasts, are the basis of a growing tourism industry. They also provide renewable resources for the timber industry around which the economic fabric of the local community has developed, and which contribute around one-third of the Victoria's annual hardwood sawlog harvest.

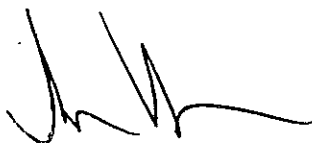
Of the 1 million hectares of public land in the region, 39% is in parks and other nature conservation reserves, arising largely from recommendations by the Land Conservation Council to the Victorian government. State forest makes up the remaining 640 000 ha and plays a major role in conserving the region's natural values.

This Plan provides for the balanced use and care of State forest. Most significantly, it provides an environment in which native flora and fauna can flourish, while the region's timber industry can continue to invest and add value to its products.

Production of this Plan is an example of integrated regional planning; based on a wide range of expertise, from within and outside the Department. An advisory committee drawn from the local community has helped review options and given valuable comment on drafts. Interested groups and individuals were also involved from early on in the project. A Proposed Plan released in March this year provided the basis for further comment and subsequent refinement of the Plan. I am very grateful to the Advisory Committee, those who took time to make submissions, and all others who contributed to the planning process.

In managing our native forests we must be responsive to new information as well as changes in government policy, community expectations, technology, and market conditions. One of the features of this Plan is that it establishes mechanisms and an orderly process for responding to such changes.

To meet the requirements of the National Forest Policy Statement, the Victorian and Commonwealth governments are currently working towards a Regional Forest Agreement on the management of East Gippsland's forests. This plan is expected to provide the basis for that Agreement.



Alan Thompson
Secretary,
Department of Conservation and Natural Resources

ACKNOWLEDGEMENTS

This Plan was prepared by a multi-disciplinary project team comprising the following people:

Brian Thompson	Team leader
Mick Bramwell	Flora and fauna planner, Bairnsdale
Kendra Dean	District forester, Orbost
Peter Geary	Research officer, Centre for Forest Tree Technology, Orbost
Stephen Henry	Flora, fauna and fisheries coordinator, Orbost
Paul Kneale	Forester, Nowa Nowa
Mark Lutze	Research officer, Centre for Forest Tree Technology, Orbost
Andrew McIntyre	Fauna planner, Orbost
Angela Murray	Geographic Information System officer, Bairnsdale
Anne Partridge	Forester, Cann River
Karen Taylor	Flora and fauna planner, Orbost.
Larissa Westbrooke	Forester, Orbost

Former team members, Tony Bartlett, Allan Lugg and Paul Marsh, made major contributions in earlier stages of the project. Melbourne based, Forest Planning staff Karl Rumba and Mal McKinty contributed to policy coordination, edited drafts and helped get the Plan into its final form. Gordon Robson and Donna Sweatman assisted with the appendixes and checking the text and references.

The team was guided by the East Gippsland Forest Management Area Advisory Committee comprising the following people.

Neil Freestone (Convenor)	Orbost community
Leonie Cameron	Concerned Residents of East Gippsland
Bruce Connelly	Victorian Eastern Development Authority
Keith Day	former Orbost Shire
Rosemary Hepworth	Orbost and District Environment Group
Bob Humphreys	Victorian Association of Forest Industries
Michael Johnstori	Australian Timber Workers Association
Les Mathieson	East Gippsland Water
Anita Pyke (vice Lorraine Szyndka)	Forest Protection Society
Heather Richardson	Orbost community
Peter Sands	Friends of Mallacoota
Doug Stevenson	Institute of Foresters

Many interested individuals and organisations provided input during the planning process as well as detailed submissions. Their contributions are gratefully acknowledged.

Departmental staff provided valuable information and assistance, particularly officers from Gippsland Area, Flora and Fauna Branch, Forest Planning and Assessment Section, Forest Information Section and the drafting staff of Natural Resources Systems Branch.

SUMMARY

Publicly owned forest in East Gippsland covers approximately 1 million hectares in a vast, contiguous tract stretching from Bass Strait to the Australian Alps and from south-eastern New South Wales to Central Gippsland. State forest comprises 640 000 ha of this land and has an important role in complementing the management of national parks and other reserves for conservation, recreation and a growing tourism industry. State forest also supplies a third of Victoria's annual sawlog harvest and protects catchments from which local communities draw clean water supplies.

The major challenges addressed in this Plan are to meet a number of conservation and resource use requirements, including the *Flora and Fauna Guarantee Act 1988*, the National Forest Policy Statement, current sawlog licence commitments to the timber industry and the sustainable yield requirements of the *Forests (Timber Harvesting) Act 1990*. The strategy used to address these challenges has three main strands:

Conservation guidelines specify minimum levels of planned protection to be provided for natural values in State forest, taking into account the extent of those values in national parks and conservation reserves. They provide a systematic basis for zoning decisions in State forest and therefore introduce stability into the process for balancing conservation with timber production goals.

Forest management zones set priorities and permitted uses in different parts of State forest. The Special Protection Zone will be managed for conservation, and timber harvesting will be excluded. The Special Management Zone will be managed for specific features while catering for timber production under certain conditions. The General Management Zone will cater for a range of uses with timber production as a high priority.

A process for reviewing management strategies and zones will enable progressive refinement of the Plan in response to new information and developments in natural resource management.

This strategy provides a network of protected areas that complements the system of national parks and conservation reserves in East Gippsland, a framework for sustainable use of the forest for timber production and other purposes, and a process for adapting to change in a systematic, orderly manner. In doing so, this Plan will fulfil the major requirements of the National Forest Policy Statement.

Specific initiatives

Conservation of biodiversity

- Minimum levels of protection of 30% to 90% have been set for each of 44 vegetation classes according to their rarity in the landscape. Where conservation reserves do not meet these targets, areas of State forest have been protected to fill the gap.
- All heathlands and buffering vegetation of 40 m width have been included in the Special Protection Zone. Potentially species-rich vegetation mosaics, which include the hinterlands of many heathland areas, have also been included in this Zone.

- All rainforest stands are protected, the level of protection increasing according to the significance of different rainforest areas. The minimum standard is provided by timber harvesting prescriptions which require that buffers be retained between logging coupes and rainforest. A higher level of protection is provided by linear reserves which include many significant rainforest stands on major rivers and streams. The highest level of protection is provided in sub-catchment areas. Overall, at least 59% of rainforest, including the most significant stands, will be protected by buffers of 100 m width or larger.
- Formal reservation is provided for at least 90% of the Mixed Forests identified in the FMA. Mixed Forests are the forest stands where a eucalypt canopy is emergent above an understorey of rainforest species.
- A strategy for conserving rare and threatened plant species is established.
- Formal protection is provided for 67% of the total area of old-growth forest, including at least 60% within each Ecological Vegetation Class. Outside formally protected areas, an additional 18% of old-growth forest is protected by virtue of it being unsuitable for timber production. Provision is made for recruitment of old-growth forest so that its total area will increase in the long term.
- Conservation guidelines have been established for key threatened and sensitive faunal species in State forest. These include protection of Long-footed Potoroos in accordance with the management strategy for this species, and planned protection for at least 100 pairs of Powerful, Sooty and Masked Owls. Specific strategies are also established for a range of other forest fauna including the Spot-tail Quoll, high-density populations of arboreal mammals, forest bats, diurnal raptors, threatened frog species, significant fish populations, rare butterflies and crayfish.
- A network of linear reserves of 200 m average width has been designed to maintain resident populations of sensitive fauna such as arboreal mammals, forest bats and hollow-nesting birds across the landscape. These will also facilitate the re-colonisation of areas that are harvested for wood production or burnt by wildfire.
- A number of areas in the Special Management Zone will be managed to supply timber while retaining high wildlife values.
- The system of sites of biological significance identified by pre-logging flora and fauna surveys between 1983 and 1993 has been reviewed and incorporated into the zoning scheme according to the significance, sensitivity and representation status of values in each site.

Forest production

- Sawlog supplies will be maintained to meet existing licence commitments and forecasts indicate that, given suitable markets for low-grade logs, sawlog supplies can be maintained at current levels until around 2030. By that time most of the sawlog production will come from regrowth forests.
- Targets have been set for the annual area to be harvested in each major forest type in order to redress a past bias towards the higher-elevation and most productive forest types, and to provide a relatively even flow of products of different species and grades.
- A schedule is established to ensure that all harvested coupes are adequately regenerated. A program of reforestation will also be implemented for former coupes that have failed to regenerate adequately.

- The species composition and productive capacity of forest areas degraded by previous selective harvesting and disease will be progressively restored by integrating harvesting of minor forest produce with sawlog production, and by specific measures to ensure adequate regeneration of species that yield durable timbers.
- Commercial thinning of regrowth forests will continue in selected stands and, if possible, be expanded to approximately 500 ha per year.

Forest protection

- The forest management zones in this Plan have been reconciled as far as possible with zones for fuel-reduction burning in the Fire Protection Plans covering the FMA.
- The Plan provides for the ongoing protection of water quality as well as regular consultation with water supply authorities.
- The catchments of the Betka and Rocky Rivers have been placed in the Special Management Zone in recognition of the priority that domestic water supply considerations are to be given in these areas.
- Priorities are established for control of pest plants and animals in State forest to complement the efforts of private land owners and ensure an integrated approach across all public land.

Cultural values

- Management strategies for flora, fauna and cultural sites have been designed to encompass the values identified to date in the joint assessment of national estate values by the Australian Heritage Commission and the Department.
- A scenic-drive network (using the existing road system) will provide access to national parks as well as a focus for protection of landscape values, and recreation and interpretive facilities.
- A system for protecting landscape values from the visual impact of timber harvesting is established. It aims to minimise the impact on areas seen from the scenic-drive network and key lookout points.
- Provisions have been made to protect the landscape around W-Tree so that the area continues to be of value for both tourism and timber production. The arrangements involve restricting the size and timing of logging coupes in the most visible areas.
- A process is established to protect Aboriginal places of significance in State forest while maintaining confidentiality about their locations.
- Significant historic places are incorporated in the zoning system to ensure that they are appropriately managed.

CONTENTS

Foreword	iii
Acknowledgements	iv
Summary	v
 Chapter 1	
BACKGROUND	1
1.1 SCOPE AND PURPOSE	1
1.2 LEGISLATIVE AND POLICY FRAMEWORK	1
1.3 MAJOR ISSUES	2
1.4 PLANNING PROCESS	3
 Chapter 2	
FOREST MANAGEMENT STRATEGY	7
2.1 FOREST MANAGEMENT VISION	7
2.2 FOREST MANAGEMENT STRATEGY	7
2.3 ZONING SCHEME	8
 Chapter 3	
BIODIVERSITY CONSERVATION	12
3.1 GENERAL PRINCIPLES	12
3.2 NATIVE FLORA	14
3.3 OLD-GROWTH FOREST	23
3.4 NATIVE FAUNA	27
3.5 SITES OF BIOLOGICAL SIGNIFICANCE	35
 Chapter 4	
FOREST PRODUCTION	36
4.1 HARDWOOD TIMBER SUPPLY	36
4.2 SILVICULTURE	41
4.3 OTHER FOREST PRODUCE	46
 Chapter 5	
FOREST PROTECTION	49
5.1 FIRE MANAGEMENT	49
5.2 STREAM AND CATCHMENT VALUES	50
5.3 PEST PLANTS AND ANIMALS	56
 Chapter 6	
CULTURAL VALUES	59
6.1 RECREATION AND TOURISM	59
6.2 LANDSCAPE MANAGEMENT	62
6.3 HISTORICAL AND ABORIGINAL PLACES	66
6.4 NATIONAL ESTATE	68

Chapter 7**FOREST ROADS.....75**

7.1 ESTABLISHING A PERMANENT ROAD AND TRACK NETWORK.....75

7.2 ROAD CLOSURES.....76

Chapter 8**PLAN IMPLEMENTATION78**

8.1 IMPLEMENTATION AND REVIEW.....78

8.2 WOOD UTILISATION PLANS.....80

8.2 MONITORING AND REPORTING.....80

REFERENCES.....81**APPENDICES**

A	Land categories in the Forest Management Area	89
B	Zoning scheme register	90
C	Description of Geographic Representation Units	106
D	Representative conservation of Ecological Vegetation Classes	108
E	Representative conservation of Ecological Vegetation Classes within Geographic Representation Units	109
F	Management of Ecological Vegetation Classes	110
G	Definition of rainforest	115
H	Management of Rare or Threatened Plant Species	116
I	Representation of old-growth forest in conservation reserves and forest management zones	121
J	Management of threatened and sensitive fauna	122
K	Plan for Special Management Zone no. 832/4 in Cabbage Tree Forest Block	128
L	Contribution of the Special Protection Zone to protection of extensive national estate and old-growth forest values	130
M	Areas and volumes available for timber production	131
N	Fuel reduction burning in the Special Protection and Special Management Zones	132
O	Scenic drive network and lookouts	134
P	List of individuals and organisations making submissions on the Proposed Management Plan.	136

LIST OF TABLES

1.	Extent of forest management zones and other land categories in the Forest Management Area	8
2.	Permitted activities in management zones	9
3.	Levels of protection of rainforest in the East Gippsland Forest Management Area	20
4.	Targets for the average area and sawlog volumes to be harvested annually in each forest type	40
5.	Stream protection in the Forest Management Area	52
6.	Characteristics and management of the Rocky River and Betka River Special Water Supply Catchment Areas	55
7.	Invasive environmental weeds with high priority for control in State forest	57
8.	Management of visitor facilities in, or immediately adjacent to, State forest	62
9.	Management of aesthetic values of national estate significance in State forest	65
10.	Historical places in State forest with national estate values	68
11.	Representation of extensive national estate values in conservation reserves and management zones	71

LIST OF MAPS

Located in back pocket

23.	Regional context - State forest and conservation reserves
24.	Detail of forest management zones in the W-Tree area
25.	Plan for Special Management Zone no. 832/04 in Cabbage Tree Forest Block
26.	Forest management zones - East Gippsland Forest Management Area

Maps 1-18 form part of the Statement of Resources, Uses and Values. Maps 19-22 were part of the Proposed Plan and are consequently now out of date.

FIGURES

1.	Proportion of public land in forest management zones and conservation reserves	9
2.	Levels of representative conservation of three Ecological Vegetation Classes	15
3.	Levels of representative conservation of Damp Forest in geographic representation units	16
4.	Interaction between growth stage and disturbance level in defining old-growth forest	24
5.	Representation of old-growth forest for the five most extensive Ecological Vegetation Classes (EVCs)	26
6.	Levels of representation of old-growth forest on public land	26
7.	Proportion of regrowth in different forest types for the net productive area (GMZ and available SMZ)	39

Chapter 1 BACKGROUND

1.1 SCOPE AND PURPOSE

The East Gippsland Forest Management Area (FMA) covers 1.2 million ha in the far eastern corner of Victoria, approximately 320 km east of Melbourne and 200 km south of Canberra. Public land comprises 87% of the area. It is covered mostly by native forest that extends from Bass Strait to the alps and forms a substantial, contiguous part of the south-eastern Australian forest (see Map 23). This forest is renowned for its diversity of natural values and importance to the local and Victorian economies through the timber industry and tourism. The Statement of Resources, Uses and Values (Lugg *et al.* 1993) describes the area in detail.

This Plan applies to State forest in the FMA (see Table 1, page 8). Its purpose is to establish strategies for integrating the use of State forest for wood production and other purposes, with conservation of natural, aesthetic and cultural values across the whole FMA. The Plan applies until 2006 unless a substantial change of circumstances (such as a major wildfire) warrants a review before then. Flexible management strategies will, however, enable progressive refinement of the Plan in response to new information.

1.2 LEGISLATIVE AND POLICY FRAMEWORK

This Plan is a "working plan" under the meaning of the *Forests Act 1958*. Government policy also requires that forest management be:

- economically viable;
- environmentally sensitive;
- sustainable for all forest values; and
- assisted by public participation in planning.

The Plan has been developed in accordance with the requirements of the *Flora and Fauna Guarantee Act 1988* and associated action statements and the *Forests (Timber Harvesting) Act 1990*. Protection of species listed under the *Commonwealth Endangered Species Protection Act 1992* is also provided for in this plan. The plan also fulfils a requirement of the Code of Forest Practices for Timber Production (CFL 1989a). The area of State forest to which the Plan applies has been set by government land use decisions in accordance with the *Land Conservation Act 1970* (LCC 1977, 1979, 1983a, 1983b, 1986, 1991a and 1991b).

This Plan also addresses the requirements of the National Forest Policy Statement (Commonwealth of Australia 1992) to which Victoria is a signatory. Accordingly, it incorporates the findings of A Study of the Old-growth Forests of East Gippsland (Woodgate *et al.* 1994) and the assessment of national estate values to date (AHC & CNR in prep.).

Other legislation, policies and plans of relevance are referred to as necessary through the text.

1.3 MAJOR ISSUES

Sustainable timber supply

Until around the year 2030, sawlog licence commitments will mostly be met from mature and overmature forest. By then sufficient regrowth forest will be available to maintain sawlog supplies. Sustainable yield forecasts for that period have to date been based on timber resource estimates from the Hardwood Area Resource Inventory System (HARIS) 1989, and on the assumption that most suitable State forest would be available for timber production. However, conservation of other forest values requires that some areas of State forest be exempted from harvesting. This has led to concerns about the compatibility of commitments to timber supply and conservation in State forest.

Low-volume forest

The history of lowland and coastal forests has, until recent decades, been one of relatively uncontrolled selective harvesting. This caused depletion of species (such as Red Ironbark and Gippsland Grey Box) that did not regenerate well after harvesting. Removal of the best-quality trees, leaving only the weak and defective, also caused a general decline in stand quality. Added to the effects of wildfires and dieback, the combination has degraded thousands of hectares of coastal and lowland forests. Although potentially productive, these forests now carry low sawlog volumes, and their habitat value is reduced. The best way to restore their health is to harvest them and regenerate the area with the original suite of species. This can only be done to a limited extent without improved markets for residual logs. Low-volume forest is currently considered as part of the sustainable sawlog resource. Larger markets for residual logs are required to improve the viability of some low-yielding forests for sawlog harvesting.

Old-growth forest

As part of the National Forest Policy Statement, the Commonwealth, States and Territories agreed to a strategy designed to conserve and manage representative areas of old-growth forest. The study of old-growth forest in East Gippsland (Woodgate *et al.* 1994) describes the growth stages, disturbance history and vegetation classes of forest in the region. It identified a total area of some 224 000 ha of old-growth forest, representing 21% of public land in the Forest Management Area. Over half (52%) of this occurs in conservation reserves and the remainder in State forest.

While old-growth forest in East Gippsland has important biological, aesthetic and cultural values, some areas also have high timber values and are required to meet timber supply commitments. The National Forest Policy Statement recognises the need for adequate representation of old-growth forest in reserves and that harvesting in some old-growth forest will continue during the transition to timber harvesting based on regrowth forests and plantations.

National estate

The Australian Heritage Commission and the Department of Conservation and Natural Resources have been jointly assessing natural and cultural values in the FMA and a draft project report is in preparation. Indications are that about 54% of State forest in the FMA supports natural and cultural places with heritage significance. Forest management plans are recognised as the principal mechanism for determining how national estate values in State forest will be managed. This mechanism is also a key requirement of the National Forest Policy Statement.

Sites of biological significance

Pre-logging flora and fauna surveys conducted between 1983 and 1993 covered one-third of the FMA. They have provided a large body of data and a sound basis for conservation planning. Survey reports usually delineated sites of biological significance and recommended them as areas from which logging should be excluded. In the absence of a process to consider these recommendations in the context of both a conservation strategy for the whole FMA and timber-supply commitments in State forest, sites of biological significance became *de facto* reserves. This Plan re-evaluates sites of significance in terms of a conservative strategy for all State forest in the FMA.

Rainforest conservation

The Department has identified Sites of Significance for Rainforest across Victoria and will soon publish this information in a separate report. East Gippsland contains 97 Sites, 62 of them in State forest. The Sites include rainforest and surrounding catchments dominated by eucalypt forest. There has been controversy over harvesting of that eucalypt forest, and the role it plays in protecting the rainforest. Appropriate management of these areas is part of the conservation strategy outlined in this Plan.

Threatened and sensitive fauna

While some threatened or sensitive fauna are conserved indirectly by conservation of their habitat, others require special attention. Of particular note are species that depend on tree hollows for nesting, and some predators that have the additional requirement of large territories of old forest (Sooty, Masked and Powerful Owls). As the age structure of the forest moves to include more regrowth, the maintenance of a suitable network of forest habitat for these species becomes an important issue. 'Loss of hollow-bearing trees' is listed as a potentially threatening process under the *Flora and Fauna Guarantee Act 1988*. Other species, such as Long-footed Potoroo and Rough Eyebright (*Euphrasia scabra*), have their own management strategies or Flora and Fauna Guarantee Action Statements, which complement this Plan.

1.4 PLANNING PROCESS

Proposed Plan

Work commenced on this Plan in 1989 with publication of a brochure, *The East Gippsland Forests: Planning Their Future*, requesting people to 'Have Your Say'. More than 90 responses were received, mostly from organisations, and representing a wide range of interests. These were placed on a register of interest to keep interested people up to date with progress on the Plan. Public meetings were subsequently held, and an Advisory Committee formed (membership is listed on page iv). The Committee met 21 times to discuss major issues, and has played an important role in ensuring that the interests and opinions of the community have been considered.

The Statement of Resources, Uses and Values for the FMA (Lugg *et al.* 1993), provides much of the background information on which management strategies are based. The Plan also draws heavily on the extensive biological data available for East Gippsland from pre-logging flora and fauna surveys, the timber resource information in HARIS, the survey of old-growth forest values (Woodgate *et al.* 1994), and assessment of national estate values (AHC & CNR in prep.). Seventeen discussion papers prepared during the course of the project have stimulated debate and helped in development of management strategies.

A pilot study in the upper Cann River catchment examined five options for achieving a suitable balance between timber production and conservation in State forest. These were presented in *Discussion Paper No. 13, Options for Forest Management*, and widely circulated for comment to help determine which option should be applied to the whole FMA. It prompted 76 written submissions, and meetings were held to discuss the options. Responses ranged from increasing timber production to increasing conservation measures, and none of the five options emerged as the most favoured. Consequently, principles for a new, preferred option were developed, which sought to represent a balance between the views expressed, and also meet legislative and policy commitments. These principles, set out below, were generally supported by the Advisory Committee.

PRINCIPLES FOR PREFERRED MANAGEMENT OPTION

- Its conservation strategy should be based on a network of protected areas and a prescriptive approach that takes account of existing conservation reserves.
- It should provide a high level of protection for old-growth forest and apply a cautious approach to conservation of sensitive and threatened species. Sites of biological significance, significant rainforest areas and areas listed under the Register of the National Estate should be managed in accordance with an assessment of the rarity, sensitivity and representation status of their values.
- Emphasis should be placed on modified timber-harvesting practices to accommodate significant biological values rather than on automatic exclusion of harvesting.
- The growth of advanced regrowth forests should be accelerated by thinning, which would help offset sawlog resources made unavailable by conservation initiatives in the Plan.
- The management strategies and zoning scheme adopted should be flexible to accommodate change.
- The plan should meet the current sustainable yield level of 174 000 cu.m of A, B and C-grade sawlogs per year.

A Proposed Forest Management Plan was launched in March 1995. The Department also published and widely circulated a brochure entitled 'East Gippsland's Forests - Striking a Balance' calling for public comment on the Plan. The comment period ran until May 26 1995, although some consultation occurred after that date. During the comment period over 20 interested groups were briefed on the Plan and encouraged to make submissions. Forty-four written submissions were received. A list of individuals and organisations providing submissions and a list of groups briefed during the comment period is provided in Appendix P.

The Department then prepared a summary of the submissions received and circulated it to the Advisory Committee along with a list of proposed changes to the Plan. At a subsequent meeting the Committee unanimously endorsed the proposed changes.

Final Plan

The following is a summary of the main changes made to produce this, the Final Plan. The changes are a result of public consultation, new information, and additional input from departmental staff.

Zoning

The areas of the management zones (shown in Table 1, page 8) have changed from the Proposed Plan. The changes are due partly to zone amendments, but mostly to the methods used to estimate the area available for timber production. The principal reasons for the changes are as follows:

- more accurate estimation of the areas protected in buffers applied to permanent streams, rainforest, and heathland areas.
- improvements in estimating the area available for timber production (GMZ - timber).
- the area of State forest covered by Heritage Rivers is now part of the SPZ. In the Proposed Plan it was included with conservation reserves.
- additional areas were included in the SPZ to provide further protection to values as described below.

Specific zone changes are described below.

Biodiversity conservation

- A number of areas around Bendoc have been added to the SPZ to increase the proportion of forest reserved in Tablelands Damp Forest and old-growth Montane Dry Woodland.
- Mixed Forest, that is forest with a canopy of eucalypts and an understorey of rainforest species, is recognised as a distinct community. Given its rarity in the FMA (approximately 470 ha currently mapped), stands occurring in State forest will be protected so that at least 90% of this community is protected overall.
- Part of Stagg Creek catchment adjacent to Errinundra National Park has been added to the SPZ because it has nationally significant rainforest values (site no. 843/5).
- Some of the conservation guidelines for fauna have been re-worded to make them easier to understand and to provide greater consistency with Forest Management Plans being prepared for other parts of Victoria. Appendix J has been added to demonstrate how this approach has been applied to large owls.
- New records of Long-footed Potoroo have generated additional areas of Special Management Zone (SMZ) in Cabbage Tree, Ellery (mostly within Park), and Kuark forest management blocks.
- The conservation guideline for Spot-Tail Quoll (formerly referred to as Tiger Quoll) has been revised from protecting 200 ha within a 500 ha area, to protecting 500 ha within a 1500 ha. This enables protection of suitable habitat within an area large enough to encompass the likely home range of the individual recorded.
- A conservation guideline has been added for the Diamond Python.
- The section on harvesting within the SMZ has been expanded and a working example included (Appendix K and Map 25).

6 *East Gippsland Forest Management Plan*

Forest production

- The Department has stated its intention to improve its forest mapping through the Statewide Forest Resource Inventory project. This will enable it to more clearly designate the area of State forest to be managed as 'commercial forest'.
- The guideline for harvesting of posts & hewn timber has been expanded.
- There is greater recognition that use of forest areas for grazing of domestic stock needs consideration on a case by case basis.

Forest Protection

- The importance of effective implementation of the Code of Forest Practices for Timber Production and associated timber harvesting prescriptions is emphasised. Recently adopted procedures for auditing compliance are outlined.
- The catchments of the Betka and Rocky River have been placed in the SMZ in recognition of the priority that domestic water supply considerations are to be given in these areas.

Recreation, landscape and cultural heritage

- In order to improve public understanding of native forest management, the Department will conduct Forest Education tours for summer visitors to East Gippsland.
- Provision is made to reduce the visual effects of timber harvesting on the forested hills around W-Tree.

Chapter 2

FOREST MANAGEMENT STRATEGY

2.1 FOREST MANAGEMENT VISION

The vision for the sustainable management of East Gippsland's forests has the following characteristics:

- Forest management will be flexible and responsive to new information. Change will be introduced in a pro-active but orderly fashion so as to maintain the confidence and stability of forest based industries and the local economy.
- Management will aim to ensure that all indigenous species and communities will survive and flourish across their natural range.
- Use of State forest resources will be according to world best practice. Standards will be maintained and improved by implementation and review of codes of practice, management guidelines, prescriptions, licensing and regulation of commercial activities on public land, and by staff training.
- Forest management will be sensitive to the cultural significance of the East Gippsland forests to the Australian community. Aboriginal places particularly will be respected and the Aboriginal community will play an increasing role in natural resource management.
- Sustainable use of the forest for recreation and tourism will be encouraged and facilitated.

2.2 FOREST MANAGEMENT STRATEGY

The strategy adopted by this plan to meet this vision has three main parts.

- **Guidelines** for the protection of conservation values or the management of uses have been developed based on the best information and expert opinion available to the Department. Where insufficient is known about a particular area a precautionary approach has been adopted. These guidelines provide a systematic basis for management decisions and a framework for reviewing these as more information becomes available.
- **Forest management zones** have then been identified based on the principles adopted in the guidelines. These zones set priorities and specify permitted activities for different parts of the forest. The three zones adopted (the Special Protection Zone, Special Management Zone and the General Management Zone) are defined according to the type of management that will be permitted and they cater for the range of forest uses including nature conservation, forest recreation, and timber harvesting. The zoning scheme is presented below in Section 2.3.
- A **review process** to evaluate and adjust the guidelines, the zones and the actions of the plan as circumstances require has also been adopted. This will ensure that the plan will remain current in the context of improving knowledge, changing government policies and community attitudes, and developments in natural resource management. Some examples of the circumstances where changes to the plan would be required include:
 - new information on the location or habitat requirements of threatened species,
 - the practicalities of road construction around some zones, or
 - the need to accommodate substantial infrastructure developments (such as transportation corridors).

While the need for flexibility is clear, the conservation of certain forest values and a suitable land base for timber production must remain secure. Chapter 8 outlines the mechanism to be used for reviewing the status of management zones.

2.3 ZONING SCHEME

As noted in the previous section, the zoning scheme divides State forest into three zones (see Table 1, Figure 1, and Map 26):

- The Special Protection Zone (SPZ) will be managed for conservation, and timber harvesting will be excluded. It forms a network designed to complement conservation reserves.
- The Special Management Zone (SMZ) will be managed to conserve specific features, while catering for timber production under certain conditions.
- The General Management Zone (GMZ) will be managed for a range of uses, but timber production will have a high priority.

Table 1. Extent of forest management zones and other land categories¹ in the Forest Management Area

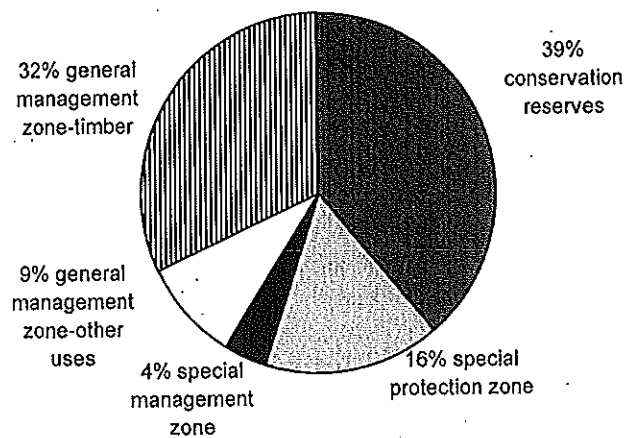
	Area (ha)	% of all land	% of public land	% of State forest
STATE FOREST				
Special Protection Zone	164 300	14	16	26
Special Management Zone	37 900	3	4	6
General Management Zone	434 500	36	41	68
Timber production ²	(332 600)	(28)	(32)	(52)
Other uses	(101 900)	(8)	(9)	(16)
State forest total	636 700	53	61	100
OTHER PUBLIC LAND				
Conservation reserves	409 500	34	39	
Other reserves & public land ¹	4 900	<1	<1	
Public land total	1 051 100	87	100	
PRIVATE LAND				
	156 900	13		
TOTAL³	1 208 000	100		

Sources: GIS (1995) and HARIS (1993)

Notes:

1. A list of land categories is provided in Appendix A.
2. Estimated net productive area available for timber production. Stream buffers and rainforest are included in the SPZ, while steep and unproductive areas are included in the 'Other uses' part of the GMZ.
3. Water bodies are not included in the area statement.

Figure 1. Proportion of public land in forest management zones and conservation reserves.



Combined with parks and other conservation reserves, the forest management zones provide an integrated conservation system and a framework for sustainable forest use. Maps 24 & 25 illustrate elements of this system at different scales. Map 26 illustrates the zoning scheme across the whole FMA. Appendix B lists the attributes of specific areas in the Special Protection and Special Management Zones.

Table 2 shows activities permitted in each zone. Soil and water conservation, maintenance of native forest cover and wildfire suppression are high priorities in all zones.

Table 2. Permitted activities in management zones

Activity	See Section	Special Protection Zone	Special Management Zone	General Management Zone
Sawlog production	4	No	Cond.	Yes
Firewood, posts, poles	4	No	Cond.	Cond.
Apiculture, seed collection	4	Cond.	Cond.	Yes
Road construction	7	Cond.	Cond.	Yes
Regrowth thinning	4	No	Cond.	Yes
Fuel-reduction burning	5	Cond.	Cond.	Cond.
Stock grazing	4	Cond.	Cond.	Cond.
Gravel production	4	No	Cond.	Yes
Recreation	6	Cond.	Yes	Yes

Yes= Permitted under standard conditions

Cond.= Permitted with additional conditions specified in this Plan

No= Not permitted

SPECIAL PROTECTION ZONE (SPZ)

This zone will be managed primarily for conservation. Timber harvesting will be excluded and other activities (like fuel reduction burning and grazing) will only be permitted where they are compatible with the values of the specific area (see Table 2). Most of the SPZ has been generated by applying the conservation guidelines set out in Chapter 3 (Biodiversity Conservation). Larger components of the zone are based on:

- representative examples of Ecological Vegetation Classes, and old-growth forest.
- representative examples of heathland mosaics and their hinterland.
- sub-catchments for protection of significant rainforest areas.
- Long-footed Potoroo special management areas, where they coincide with other values.
- key threatened and sensitive fauna localities.

These are linked to each other and to conservation reserves by other parts of the SPZ, which include:

- natural features zones on rivers and streams (LCC 1983a, 1983b, 1986).
- linear reserves of 200 m average width.
- areas protected by the Code, including stream buffers (20 and 40 m) and all rainforest stands with their associated buffers (20 and 40 m).
- all heathland areas and buffering vegetation of at least 40 m width.

Substantial areas identified as sites of biological significance or having national estate values are also included in the SPZ.

Appendix B lists the key values of areas in the SPZ. Each area has a site number for cross referencing to Map 26.

SPECIAL MANAGEMENT ZONE (SMZ)

This zone covers a range of areas requiring special management, including:

- Some of the areas are designated for conservation of species such as Powerful, Sooty and Masked Owls, Spot-tail Quoll and rare butterflies. Timber harvesting will be planned in accordance with the appropriate guidelines (see section 3.4). Recorded sites of these species in parts of the FMA where they are poorly conserved, or where they coincide with other values, have been included in the SPZ.
- Long-footed Potoroo special management areas will be managed in accordance with the Long-footed Potoroo Management Strategy (Saxon *et al.* 1994). Many potoroo sites coincide with other values and have been included in the SPZ. The balance are in the SMZ, where a moratorium will apply to timber harvesting, new roading and most fuel-reduction burning until review of this Plan or if the outcomes of research indicate a change is necessary. A research program into the ecology of Long-footed Potoroo is under way and will be complete before the year 2000.
- Point localities of significant features including historic sites, research sites and populations of key threatened plant species. These features are too small to represent accurately on maps in this Plan and have been placed in 'Special Management Sites' of 250 m radius. Special Management Sites flag an area as having important values. Activities (like road construction, timber harvesting or fuel reduction burning) will only be undertaken after consultation with appropriate specialists. Management of these sites will be considered on a case-by-case basis.

- Areas where modified timber harvesting techniques will be used to minimise the visual impact of harvesting (around W-Tree), and to minimise risks to catchment values (Betka River and Rocky River Special Water Supply Catchment Areas). See section 5.2.

Management arrangements for areas in the SMZ will be determined on a case-by-case basis according to the values present. In some areas (like Long-footed Potoroo sites) timber harvesting will be excluded while research is under way, while in others (like the Betka River and Rocky River Special Water Supply Catchment Areas, and around W-Tree), the timing of harvesting, size of coupes and method of extraction will be affected. Each area identified for conservation of other values will have a special plan prepared detailing where, and under what conditions timber harvesting may occur. Appendix K and Map 25 provide an example for a SMZ (Powerful and Sooty Owl) in Cabbage Tree Forest Block.

Appendix B lists the key values of all areas in the SMZ. Each area has a site number for cross referencing to Map 26. Appendix M gives an estimate of the area and sawlog volume likely to be available in the SMZ.

GENERAL MANAGEMENT ZONE (GMZ)

Forest in this zone will be managed for sustainable production of timber and other forest products. Secondary aims include protection of landscape, provision of recreation and educational opportunities, fire protection and conservation to complement adjacent zones.

Approximately 25% of the GMZ is either inaccessible, too steep or rocky, or is inherently unproductive and so is unsuitable for timber production. Ideally, the area suitable for timber production would be mapped and zoned separately as 'commercial forest'. Unfortunately current mapping is insufficiently accurate to do this and only field reconnaissance can accurately determine whether or not a given area is suitable for harvesting. Consequently the GMZ can only be divided into indicative subzones, one for 'timber production' and one for 'other uses'. An example of their relationship is illustrated on Map 24.

Timber production subzone

This subzone will be used to produce sawlogs on a sustainable basis. It corresponds to the net available productive area in the GMZ — that is, the area capable of producing sawlogs after allowances have been made for factors such as steep slopes and low productivity. This generally corresponds to areas where soil conditions and rainfall enable suitable tree species to grow to a height of 28 m or greater. Harvesting operations, road construction and maintenance, and regeneration of harvested areas with local species will be undertaken in accordance with the Code and associated prescriptions. Harvesting and regeneration in this subzone will produce a mosaic of native forest of different ages.

Other uses subzone

This subzone corresponds to the 25% (approx.) of the GMZ unsuitable for sawlog production. While activities such as fuel-reduction burning, harvesting of minor forest produce (such as firewood, poles and honey), and recreation will be permitted, they tend to be localised. Consequently much of this subzone will remain relatively undisturbed and contribute substantially to conservation of drier forest types and their attendant fauna.

Chapter 3

BIODIVERSITY CONSERVATION

3.1 GENERAL PRINCIPLES

The extent, diversity and contiguity of its relatively intact native vegetation make East Gippsland an important area for biodiversity conservation in south-east Australia. While conservation reserves are extensive, State forest comprises the bulk of forested land in the region, and has a major role in conserving biodiversity.

Resolution of debate over how timber production and nature conservation can be integrated to achieve ecologically sustainable forest management is the most pressing forest management issue in the FMA and Australia.

Existing mechanisms for conserving natural values in State forest, have evolved in a cumulative and piecemeal way. With new issues arising—such as management of old-growth forest, national estate values and threatened species, a fresh and systematic approach to conservation in State forest is needed. This Plan provides an integrated approach to regional biodiversity conservation by establishing conservation standards for natural values and then applying them with reference to existing conservation reserves.

Conservation guidelines

The Plan establishes conservation guidelines for key biological values in State forest. These set minimum levels of protection to be provided by the SPZ, SMZ and conservation reserves. The guidelines cover:

- conservation of representative areas of Ecological Vegetation Classes (EVCs) and old-growth forest;
- conservation of heathland and rainforest environs;
- protection of threatened and sensitive flora and fauna species; and
- creation of a linear reserve network.

Application of the guidelines provides the basis for most of the SPZ and SMZ. It ought to be recognised that the GMZ also contributes to nature conservation. Large areas in the GMZ are unsuitable for timber harvesting and are important for conservation of some EVCs and their attendant fauna, while regrowth forests provide habitat and resources for many species.

A number of species occurring in State forest are listed under the *Flora and Fauna Guarantee Act 1988*, and Action Statements for some are published. The conservation guidelines in this Plan are consistent with, or build on, those Action Statements. The Plan will be suitably amended as new Action Statements are prepared. The guidelines are based on currently available information and provide a starting point for the ongoing integration of conservation and timber production in State forest. Chapter 8 (Plan Implementation) outlines a process for considering new information and amending guidelines as necessary.

Representative conservation

This term, used throughout the Plan, refers to how much of a particular value (like an EVC or old-growth forest type) ought to be managed with conservation as first priority. In the context of this Plan it refers to the proportion of the value within parks, reserves and the SPZ in the context of its total extent in the region.

Conservation of species and communities across their natural geographic range is fundamental to sound nature conservation. Protecting multiple populations spread across a species' range conserves local diversity and genetic variation, and guards against the risk of isolated populations being destroyed by natural disasters or other factors. The concept of representative conservation is usually applied to situations where extensive natural values are being diminished by land clearing or other activities. In East Gippsland, however, almost all public land is covered by native vegetation that, although managed for different purposes, is intended to remain as such.

Representative conservation can be assessed at different scales. For instance, across the whole area, 'Wet Forest' might be considered adequately represented by the large tracts occurring in the Snowy River National Park. The same community more than 100 km away in the eastern corner of the State would therefore not warrant special protection at this scale, even though it is locally rare. Clearly such an isolated stand of Wet Forest among drier vegetation would contribute to local biodiversity, and should be a candidate for special protection. Consequently the FMA is too large to be considered as a single unit for the purposes of representative conservation.

At the other extreme, representation could be considered at the scale of forest management blocks (the FMA contains 103, averaging around 10 000 ha each). Given the variation in the natural environment across East Gippsland, many species or communities would be rare or absent in some blocks although generally common in the region. Representation at the block scale would result in many areas of State forest being set aside without consideration of adjacent blocks or the substantial areas protected in nearby national parks. Forest management blocks are therefore too small for assessing representative conservation.

Eleven geographic representation units (GRUs) have therefore been identified that reflect the scale of landscape change across East Gippsland (see Map 23). They are based on similar land form, geology, vegetation and climate. Their boundaries generally follow topographic features such as streams and ridges, and also conform to those of forest management blocks, or compartments where blocks are subdivided. Appendix C briefly describes each GRU.

Analyses of the representation of vegetation communities and significant flora and fauna in the parks and reserves in each unit were used to determine whether additional representation was required in State forest. The Plan provides representative conservation of vegetation communities and significant flora and fauna within each GRU and therefore across the region.

3.2 NATIVE FLORA

East Gippsland is renowned for the diversity of its vegetation. Representative conservation of vegetation communities, protection of rare or threatened species and sound silvicultural practices are central to its conservation.

Representative conservation of native vegetation in the SPZ and conservation reserves forms the backbone of the biodiversity conservation strategy. Protection of representative examples of Ecological Vegetation Classes and old-growth forest as well as the environs of rainforest and heathland ensures that most fauna habitat types are also represented. Elsewhere in State forest these strategies are supported by areas unsuitable for timber harvesting, and by silvicultural practices that ensure harvested areas are adequately regenerated.

Aims

- *Ensure that indigenous plant species and communities survive and flourish throughout the FMA.*
- *Protect sensitive and threatened plant species and communities.*

Ecological Vegetation Classes

Woodgate *et al.* (1994) revised vegetation mapping in the FMA, and described 44 Ecological Vegetation Classes (EVCs) based on a combination of floristic, structural and ecological factors. These have been adopted as the primary basis for planning flora conservation.

Representative conservation of EVCs has been considered across all public land in East Gippsland and within Geographic Representation Units (GRUs). At the FMA scale, EVCs have been ranked according to their total area, and representation targets of 30 to 90% have been set. The specified level of protection increases with the rarity of the EVC in the landscape.

CONSERVATION GUIDELINE Representative conservation of Ecological Vegetation Classes

The following proportion of each EVC will be included in the SPZ and conservation reserves:

- 30% of EVCs that occupy more than 1% of the FMA (approximately 10 000 ha).
- between 30 and 90% of EVCs that occupy between 0.1% (approximately 1000 ha) and 1% of the FMA, depending on the extent of the particular EVC.
- 90% of EVCs that occupy less than 0.1% of the FMA.

Selection of areas to meet these targets will be guided by the following principles.

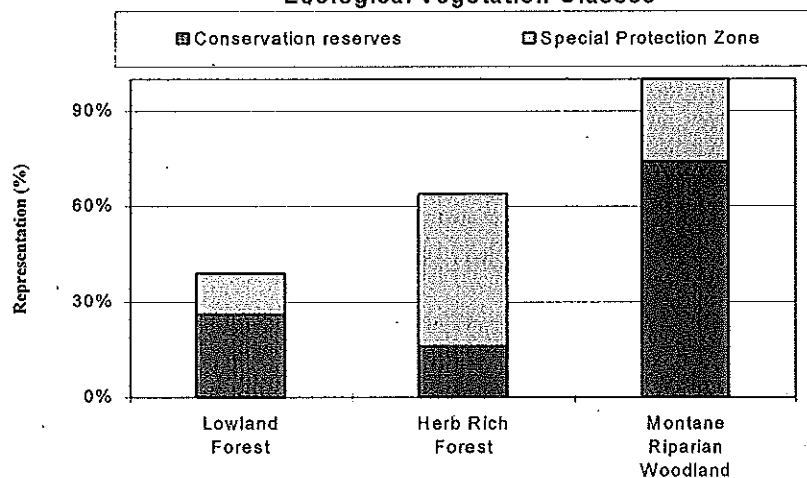
- Where feasible, approximately 1000 ha of the larger EVCs should be protected in each geographic representation unit.
- Chosen areas should be practical management units, normally not less than 100 ha, and defined by natural boundaries such as stream or ridge lines, or management boundaries such as roads.
- Additional examples of around 100 ha of highly variable EVCs such as Lowland Forest and Banksia Woodland may be included.

CONSERVATION GUIDELINE continued

- Disturbed, fragmented and small or non-viable areas should be avoided.
- Preference will be given to old-growth forest or negligibly-disturbed forest as defined by Woodgate *et al.* (1994).
- Preference will be given to areas that support other conservation strategies in this Plan (for example, old-growth forest, large forest owls) and to establish an interlinked protected-area network across the FMA.
- Where feasible, use will be made of areas unsuitable for timber production.
- Areas adjacent to private land or in Priority 1 and 2 burning corridors will be avoided, as they are more likely to be disturbed.

Figure 2 illustrates how this conservation guideline has been applied to meet the targets for a selection of EVCs. An analysis for all EVCs is provided in Appendix D. The highest level of protection is set at 90% rather than 100% solely because of practical considerations. The presence of small, disturbed or fragmented stands, and mapping anomalies, would make a 100% target difficult to achieve for some EVCs.

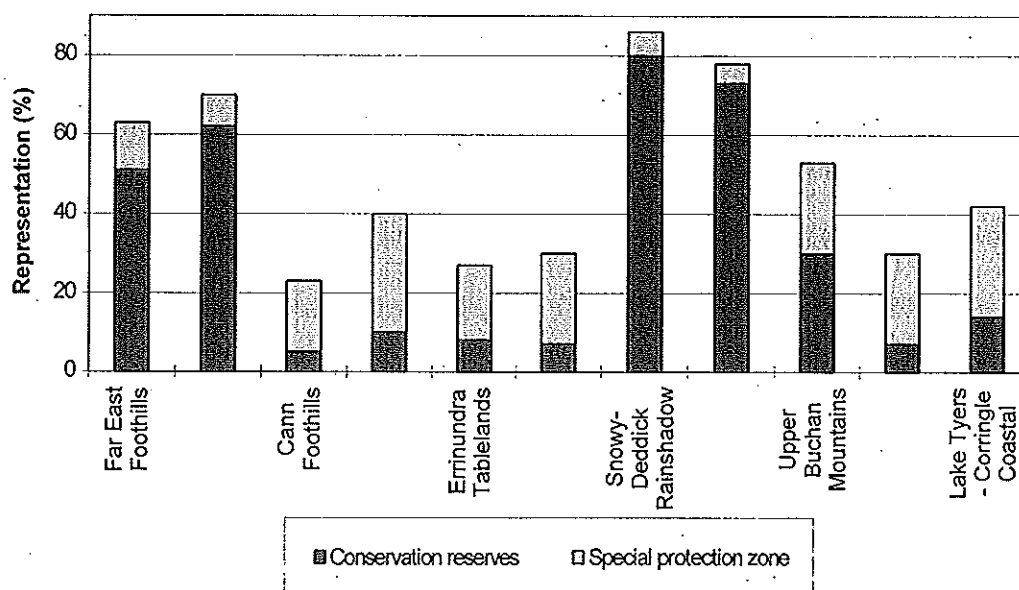
Figure 2. Levels of representative conservation of three Ecological Vegetation Classes



As well as total representation, the size, distribution and configuration of protected areas are also important considerations. Figure 3 illustrates how application of this guideline has improved the conservation status of Damp Forest across its range in the FMA by protecting selected areas where it is poorly reserved. Appendix E shows representative conservation of all EVCs across all GRUs. Specific representation targets were not established at the GRU scale because the distribution of certain EVCs in some units comprises scattered, fragmented or disturbed stands that do not lend themselves to creation of practical or meaningful components of the SPZ. Moreover, some EVCs were well represented in national parks in immediately adjacent units.

In applying the representative conservation guideline, consideration has been given to factors such as the conservation significance, sensitivity to disturbance and disturbance history of different EVCs. Appendix F describes application of the guideline for each EVC. Additional measures to ensure adequate conservation of some EVCs and associated vegetation communities are described below on pages 16 ff.

Figure 3. Levels of representative conservation of Damp Forest in geographic representation units



Heathlands

The heathlands of East Gippsland comprise a number of EVCs. They are significant due to their high species diversity and the large number of threatened flora and fauna species they support (Lugg *et al.* 1993), some of which occur in, or utilise, the margins of heathlands.

Key to the conservation of heathlands and their attendant fauna is the maintenance of fire regimes that complement fire-protection goals, are appropriate biologically and feasible to implement. The Orbost Heathland Management Plan (Avis 1993) addresses this issue. Although heathlands are unlikely to be directly affected by timber harvesting, indirect effects associated with roading and hydrological disturbance are of concern.

CONSERVATION GUIDELINE **Heathlands**

- All heathlands and buffering vegetation of at least 40 m width will be included in the SPZ.
- New roads will not be built across heathlands, unless there is no reasonable alternative.
- Large representative examples of heathland mosaics, including fringing woodlands, will be included in the SPZ.
- Fire management of coastal heathlands will be in accordance with the Orbost Heathland Management Plan (Avis 1993) and the Orbost Fire Protection Plan (Bartlett 1990).
- This guideline applies to all heathland EVCs (Sand Heathland, Clay Heathland, Wet Heathland, Riparian Scrub Complex and Sub-alpine Treeless Complex) and other treeless vegetation.

Eucalypt forest surrounding heathland is generally unsuitable for timber production, and poor drainage makes road construction difficult. This guideline, therefore, formalises existing protection.

The AHC/CNR joint national estate project identified areas of potentially high species richness for both flora and fauna. These often correspond to mosaics of heathland with other EVCs such as Banksia Woodland, Lowland Forest and Riparian Forest. Good examples of these mosaics have been included in the SPZ (see section 6.4).

Box - Ironbark Forest

A number of forest types supporting box and ironbark species are well represented in Coopracambra and Croajingolong National Parks, and in Lake Tyers State Park (LCC 1986). Foothill Box Ironbark Forest as defined by Woodgate *et al.* (1994) is however very uncommon and consequently most stands have been included in the SPZ. Small stands of box and ironbark species also occur throughout the lowlands of East Gippsland, primarily on ridges within a variety of dry forest types. Well-developed examples such as those in the Sardine forest management block have been included in the SPZ. Many areas supporting box and ironbark species have been degraded by selective logging and poor regeneration practises earlier this century. Silvicultural prescriptions set out in Section 4.2 should see an increase in the area of box - ironbark as such areas are progressively rehabilitated.

Herb-rich Forest

This significant EVC occurring on fertile lower slopes encompasses a range of forest communities dominated by box species including areas commonly referred to as Gippsland Grey Box woodland. Its proximity to farmland, has led to disturbance from selective harvesting of posts, poles and firewood, grazing by domestic stock and frequent burning. Undisturbed areas of Herb-rich Forest are likely to be rare and of high conservation significance. While substantial areas are placed in the SPZ (see Appendix D), better knowledge of their condition is necessary to determine management requirements. Stands of Herb-rich Forest likely to be significantly disturbed, and stands within Priority 1 burning corridors (see Fire Management in Chapter 5), have been placed in the SMZ. These will need more detailed conservation planning and rehabilitation. Some examples occur east of Noorinbee (Site numbers 873/2, 873/3).

ACTION:

Major areas of Herb-rich Forest will be inspected to assess their condition. A plan will be devised to reconcile conservation and rehabilitation of Herb-rich Forest with fire protection and harvesting of minor forest produce.

Mixed Forest

Mixed forests occur within the Wet Forest EVC in situations where the eucalypt canopy is emergent above an understorey of rainforest species. Radic *et al.* (1985) mapped approximately 470 ha of Mixed Forest on Errinundra Plateau, the only place where substantial areas are likely to occur in East Gippsland. According to the criteria used for determining suitable levels of EVC representation (see previous section), Mixed Forest is rare, occupying less than 0.1% of public land in the FMA. Accordingly, at least 90% of Mixed Forest should be protected within conservation reserves or the Special Protection Zone. The scenic quality and ecological importance of Mixed Forests were major reasons for creation of the Errinundra National Park (LCC 1986). The Park includes about 300 ha (63 %) of the Mixed Forest mapped by Radic *et al.* (1985). An additional 30 ha (7%) has been included in the SPZ. The remaining 140 ha (30%) is in areas currently mapped as GMZ or SMZ and is scattered in small stands mostly less than 10 ha. Many are in gullies and are consequently protected by prescription. There may however be some stands that would remain accessible for harvesting, and given their rarity, these too, warrant protection.

ACTION:

Suitable prescriptions will be developed to ensure that at least 90% of the Mixed Forest vegetation class is protected.

Rainforest

Rainforest covers some 9600 ha (<1%) of public land in the FMA. It comprises four recognised EVCs: Cool Temperate, Warm Temperate, Cool/Warm Temperate Overlap and Dry Rainforest. The rainforest of East Gippsland is described in more detail by Cameron (1992) and Lugg *et al.* (1993).

Some 34% of rainforest in East Gippsland occurs in national parks and conservation reserves, with most of the balance in State forest. The Code of Forest Practices for Timber Production (Code) requires that rainforest be excluded from timber harvesting and that it be protected by appropriately managed buffers. This Plan provides increasing levels of protection to areas of rainforest according to their significance.

The Department recently commissioned a review of current rainforest protection measures, and the report (Burgman and Ferguson 1995) proposes a number of areas for improvement. Some of its recommendations have been adopted in this Plan, some are being considered in the review of the Code (CNR 1995 b), while others will guide future planning and research related to rainforest conservation.

Identification of rainforest

A working definition for field identification of rainforest in East Gippsland is provided in Appendix G. Protection of rainforest from the effects of timber harvesting, road construction, fuel-reduction burning and other activities depends on field officers being familiar with rainforest and its conservation requirements. To maintain the relative ease of identifying mature rainforest from aerial photographs and on the ground, the definition does not encompass forest that is transitional between mature rainforest and adjacent eucalypt forest. Transitional forest areas (or ecotones) will, in most cases, fall within the rainforest buffers.

The working definition is based on dominant overstorey species and consequently does not include 'mixed forests' where a eucalypt canopy is emergent above an understorey of rainforest species. In accordance with the recommendations of Burgman and Ferguson (1995) conservation of Mixed Forest has been considered separately from rainforest (see previous section).

ACTION:

Field staff will continue to be trained in the identification and conservation of rainforest.

Rainforest conservation

This Plan provides three levels of rainforest protection. The minimum standard is provided by current timber harvesting prescriptions which require that buffers of at least 20m be retained between logging coupes and rainforest. In practice retained buffers are often wider than the minimum because of other harvesting constraints such as steep slopes and the requirement that trees are not to be felled into the buffer. A higher level of protection is provided by the linear reserve network (see Section 3.4) which includes many significant rainforest stands on major rivers and streams. The highest level of protection is provided in larger parts of the SPZ, usually based on sub-catchment areas.

The Department has identified Sites of Significance for Rainforest across Victoria and will soon publish this information in a separate report. The Sites are based on stream catchments, with rainforest generally occupying a small proportion of their area. East Gippsland contains 97 Sites, 62 of them in State forest. Most include features such as large individual rainforest stands, a high concentration of stands, an undisturbed context or good topographic protection.

Sites of Significance for Rainforest have been ranked as having National, State or Regional significance, and provide a basis for a hierarchical approach to rainforest conservation. During preparation of this Plan 'core areas' within each Site were identified to provide a more detailed picture of forest areas most important for rainforest conservation.

Core areas are based on:

- the largest individual rainforest stands or highest concentration of stands within each Site.
- rainforest stands surrounded by relatively undisturbed forest or old-growth forest as defined by Woodgate *et al.* (1994).
- sub-catchment boundaries or logical management boundaries such as roads or topographic features.

ACTION:

Reports will be published that document Sites of Significance for Rainforest, core areas within these sites and the process used for deciding the management of each Site.

CONSERVATION GUIDELINE Rainforest

All rainforest in State forest and a surrounding buffer of non-rainforest vegetation will be included in the SPZ. Timber harvesting will be excluded. Fuel-reduction burning and road construction will also be excluded as far as is practicable. Vegetation surrounding rainforest will be protected as follows:

Prescriptions. Buffer strips will be retained between all logging coupes and rainforest in accordance with harvesting prescriptions. Current prescriptions require buffers to be at least 20 m wide next to linear strips of rainforest and at least 40 m wide for all other stands. Trees may not be felled into the buffer. These prescriptions may change as a consequence of the current review of the Code of Forest Practices for Timber Production (CNR 1995b).

Linear reserves (see section 3.4 and Map 26). Where rainforest stands occur in linear reserves they will receive large buffers, usually 100 m or more. Exceptions may occur in some circumstances, for example where an existing road close to rainforest provides a logical boundary to the linear reserve. Construction of roads across linear reserves containing rainforest will be avoided wherever practicable.

Sub-catchment protection. Core areas within Sites of Significance for Rainforest have been selected and placed in the SPZ in accordance with the following principles:

- preference will be given to sites of National, State, and Regional significance in that order of priority.
- preference will be given to core areas that are substantially undisturbed and which also help fulfil conservation guidelines for other values (such as Sooty Owl, Long-footed Potoroo and representation of EVCs or old-growth forest).
- a geographic spread of rainforest areas with sub-catchment protection should be provided across the FMA.
- a lower priority will be given to core areas that are large in relation to the rainforest they include, significantly disturbed, or close to conservation reserves with similar rainforest stands.

Application of this guideline ensures that at least 58% of rainforest in East Gippsland, including the most significant stands, will be protected by buffers of around 100m or larger (Table 3).

Table 3. Levels of protection of rainforest in the East Gippsland Forest Management Area.

RAINFOREST TYPE	AREA (HA)	REPRESENTATION (%)			
		State Forest			Conservation Reserves
		Prescriptions	Linear Reserves	Sub-catchments	
Cool Temperate	2564	38	12	8	42
Warm Temperate	6785	43	16	14	27
Dry	13	0	0	0	100
Cool/ Warm Overlap	269	47	5	7	41
TOTAL	9631	42	14	12	34

Source: GIS (1995)

Fire management

Fire is the principal natural factor determining the extent of rainforest and the most important factor affecting rainforest conservation in East Gippsland. Concern about fuel-reduction burning in the vicinity of rainforest centres on balancing the risk of it causing damage to rainforest margins against the risk of more substantial damage by wildfire that fuel-reduction burning may alleviate.

Fire management in the FMA is governed by the Fire Management Plans covering the former Bairnsdale and Orbost Regions (Long 1990, Bartlett 1990). Consequently this Plan does not address fire management in detail, but it does highlight areas where fire management strategies may need review (see Fire Management in Chapter 5).

ACTION:

As the fire plans are reviewed, sub-catchments managed for rainforest conservation should be zoned as Priority 4 burning zones. That means that fuel-reduction burning and other fire management activities would only occur after consideration of ecological factors.

Rare or threatened plant species

Some 273 Victorian rare or threatened plant species (VROTS) have been recorded in the FMA (Flora Information System 1994). 27 of these are listed under the *Flora and Fauna Guarantee Act 1988* and six under the Commonwealth *Endangered Species Act 1992*. Many are confined to areas within national parks, such as the sub-alpine environment around the Cobberas, the rainshadow country along the Snowy River valley or the diverse coastal heathlands in the far east. Lugg *et al.* (1993) provide more background on VROTS in the FMA.

The conservation status of VROTS varies widely. Some such as Rough Eyebright (*Euphrasia scabra*) are threatened nationally and warrant high levels of protection, while others are rare in Victoria but not considered threatened. Some are locally common or even abundant, such as Errinundra Pepper (*Tasmannia xerophila ssp. robusta*). Most VROTS occur in specialised habitats, such as rainforest and heathland, which are protected by representative EVC conservation and other strategies in this Plan.

However, some VROTS warrant special attention because they have few known populations, are potentially affected by timber harvesting and associated activities or are at the edge of their range in the FMA: VROTS have been placed in three management categories according to their status, sensitivity to disturbance and extent in the FMA.

CONSERVATION GUIDELINE Victorian Rare or Threatened Plant Species

Category 1. Species threatened in Victoria or nationally significant: all known populations will be included in the SPZ or SMZ.

Category 2. Species that are rare in Victoria and are poorly known, have few records or are at the edge of their range in East Gippsland: substantial representative populations will be included in the SPZ or SMZ.

Category 3. Species that are rare in Victoria but unlikely to be threatened in State forest: no special provisions.

Wherever practicable Victorian rare and threatened plant species in Categories 1 and 2 should be included in larger parts of the SPZ or SMZ, in combination with other values. Isolated populations will be placed in special management sites (500-m-diameter circles). Any disturbances proposed within these sites (logging coupes, road construction, fuel-reduction burning) will be planned in consultation with Departmental biologists to ensure that the species is adequately protected.

The precise location of populations of threatened species that are vulnerable to illegal collection will be kept confidential.

Appendix H lists all VROTS known to occur in State forest, their status and representation within management zones.

All records of the species in Category 1 have been included in the SPZ.

Of the 42 species in Category 2, all known populations of 39 species are included in the SPZ and SMZ. The remaining three species—Rough-fruit Pittosporum (*Pittosporum revolutum*), Tangle Orchid (*Plectorrhiza tridentata*) and Sandfly Zieria (*Zieria smithii*) – are locally common in the far east of the FMA, where they are well represented in national parks, SPZ and SMZ. Further west, near the edge of these species' range, all recorded sites are included in the SPZ and SMZ.

Category 3 contains 19 species: some, such as Prickly Oxylobium (*Oxylobium ilicifolium*), are locally common in a range of EVCs; some, such as Oval Fork-fern (*Imesipteris ovata*) in rainforest, are confined to protected EVCs; while others, such as Lacy Wedge-fern (*Lindsaea microphylla*), are known to tolerate disturbance. Although no special provisions are made for these species, they are well represented in national parks, reserves and the SPZ in any case.

3.3 OLD-GROWTH FOREST

As part of the National Forest Policy Statement (NFPS), the Commonwealth, States and Territories have agreed to a strategy for old-growth forest conservation. The strategy requires that:

- agreed criteria be determined and assessments undertaken to determine conservation values of forests including old-growth values;
- old-growth forests be conserved primarily in nature conservation reserves, and supported by complementary management outside reserves;
- a comprehensive, adequate and representative reservation system to protect old-growth forest values be in place by the end of 1995; and
- management plans to appropriately protect old-growth forest values be developed by the relevant management agencies.

This section outlines a strategy for State forest that complements the existing reserve system to fulfil these requirements.

Aims

- *Provide adequate and representative conservation of old-growth forest across the FMA.*
- *Conserve representative samples of old-growth forest in each ecological vegetation class.*
- *Provide for recruitment of old-growth forest and conservation of old-growth forest values in perpetuity.*

Defining old-growth forest

Woodgate *et al.* (1994) described and mapped old-growth forest in the FMA by documenting and analysing forest characteristics and disturbance records. They developed the following definition which is compatible with that in the NFPS.

"Old-growth forest is forest which contains significant amounts of its oldest growth stage in the upper stratum - usually senescing trees - and has been subject to any disturbance, the effect of which is now negligible."

This definition has also been endorsed by the National Forest Inventory and the Australian Heritage Commission.

The project identified 224 000 ha of old-growth forest covering 21.2% of public land in East Gippsland. Ninety percent of it (202 160 ha) is within the five most widespread EVCs in the FMA (Shrubby Dry Forest, Damp Forest, Wet Forest, Banksia Woodland and Lowland Forest). The remaining 10% (21 840 ha) is spread among 21 less common EVCs (see Appendix I).

A further 19.3% of public land was identified as supporting 'negligibly disturbed forest' that has not yet reached its oldest growth stage, and another 7% as supporting forest significantly disturbed by natural means, chiefly the 1983 wildfire in the Cann River headwaters. The remaining 52% of public land was considered significantly disturbed by unnatural or unknown means and unable to qualify as old-growth forest until the effects of past disturbances diminish. Figure 4 illustrates the relationship between growth stage and disturbance level in each of these forest categories.

Figure 4. Interaction between growth stage and disturbance level in defining old-growth forest

PREDOMINANT GROWTH STAGE	DISTURBANCE LEVEL			
	Undisturbed	Negligible disturbed	Significantly disturbed	
Senescing	Old-growth forest		Naturally disturbed forest	Unnaturally disturbed forest
Mature	Negligibly disturbed forest			
Regrowth and regeneration	Stands including regrowth or regeneration were all considered significantly disturbed			

Source: Woodgate *et al.* (1994).

The area mapped as old-growth forest is only as accurate and reliable as the information used to define it. Woodgate *et al.* (1994) used 1:40 000 aerial photographs, with limited field checking. At that scale, mapping of old-growth forest parameters is indicative only. Historical information on forest disturbance is also incomplete and of varying precision. Old-growth forest mapping will improve as:

- forest growth stages, crown cover and dominant species in the FMA are more accurately mapped as part of ongoing natural resource assessment;
- historical disturbance records and anecdotal information are verified through field checking;
- assumptions about the impact of disturbance are refined through further analysis of existing data, additional research and improved remote-sensing techniques; and
- improved mapping and a better understanding of old-growth forest will be an important input to the ongoing refinement of State forest management strategies (see Chapter 8).

ACTION:

An old-growth forest verification program will be established to:

- *increase the awareness of field staff about the process for identifying and managing old-growth forest; and*
- *improve the quality of disturbance records important in defining old-growth forest – in particular, records of fuel-reduction burning, selective logging and grazing.*

Conservation of old-growth forest

Conservation reserves include 52% of the old-growth forest in the FMA, including the largest, most contiguous stands (see Appendix I). While these reserves are the primary means of conserving old-growth forest, complementary management of State forest will ensure that viable and representative areas of old-growth forest in all forested EVCs are conserved across their range in the FMA.

Key considerations of this strategy are the level of representative conservation of old-growth forest, the size, configuration and context of protected stands and the management of disturbance. Small scattered stands are more vulnerable to disturbance and less likely to retain their old-growth status than larger areas. Conversely, a few large, protected areas of old-growth forest are likely to have high integrity but are unlikely to include the full range of old-growth forest values that exist. As all old-growth forest areas are susceptible to wildfires, the chances of conserving them will be increased by ensuring that old-growth forest values are replicated in protected areas spread across the FMA.

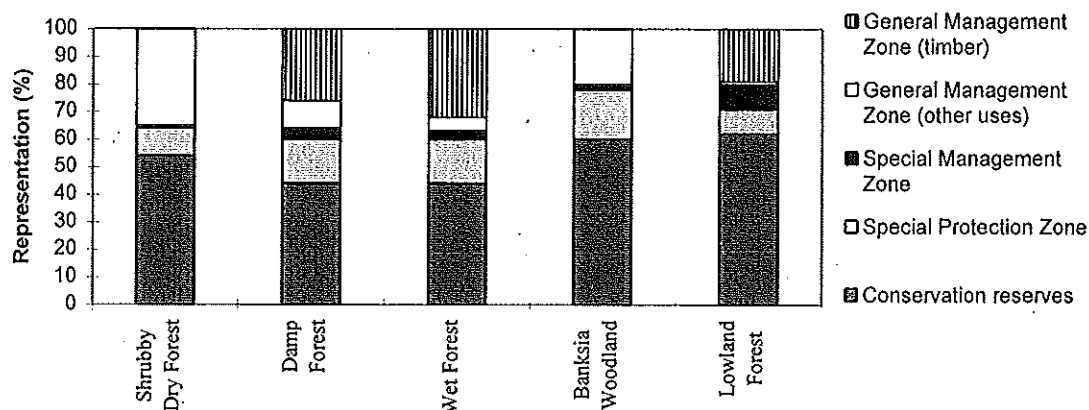
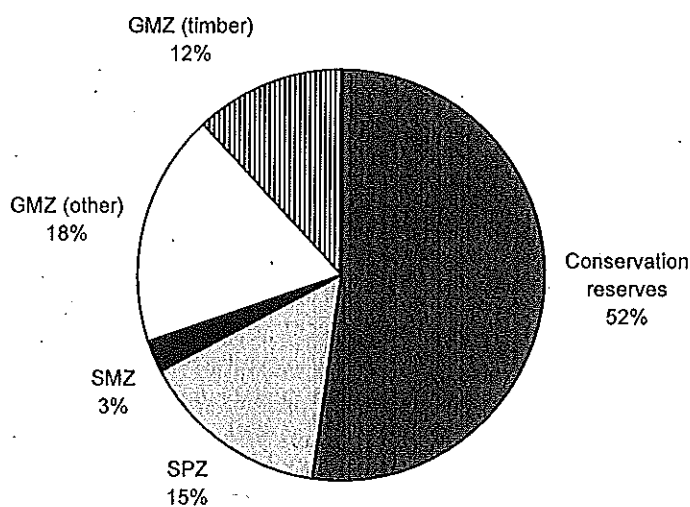
CONSERVATION GUIDELINE **Old-growth forest**

At least 60% of the old-growth forest in each EVC will be protected in the SPZ and conservation reserves. Selection of areas to be included in the SPZ will be based on:

- the guideline for EVC conservation (see section 3.2) and general reserve design principles.
- analysis of the representation of each old-growth forest EVC in each Geographic Representation Unit (GRU).
- maintaining representative and viable examples of old-growth forest across the landscape.
- protection of mosaics of old-growth forest, negligibly disturbed forest and naturally disturbed forest to provide for recruitment of old-growth forest in the long term.
- combining old-growth forest conservation with other strategies to create larger, consolidated areas in the SPZ.

Old-growth forest analyses will be re-run when major improvements to baseline data are made and, if necessary, amendments will be made to the zoning scheme (see Chapter 8).

The minimum representation level of 60% is consistent with that recommended by Kirkpatrick and Brown (1991) for attributes susceptible to destruction by disturbance, or dramatically reduced in area since European settlement. Implementation of other strategies in this Plan, such as EVC representation (described earlier in this chapter) and large forest owl conservation (see section 3.4), mean that more than 60% of old-growth forest will be protected in many EVCs. Figure 5 illustrates how this guideline has been applied to the five most extensive EVCs in the FMA, and Appendix I provides more detail on how this strategy has been applied. Altogether, 65% of old-growth forest will be formally protected (Figure 6) and an additional 18% will be informally protected by virtue of being unsuitable for timber production.

Figure 5. Representation of old-growth forest for the five most extensive EVCs**Figure 6. Levels of representation of old-growth on public land**

Dynamic nature of old-growth forest

The area of old-growth forest is dynamic. New areas will be recruited as trees reach their older growth stages, or as the effects of past disturbance diminish. Other areas will cease to be old-growth forest due to wildfires, clear-felling and other disturbances. The key to management of old-growth forest is management of disturbance. In the past the impacts of human activities on native forests were dispersed according to the location, desirability and accessibility of natural resources (timber, fodder, minerals and arable land). Over two centuries the cumulative effect of these activities has left few areas in East Gippsland undisturbed.

In recent times the creation of national parks and improved management of native forests has confined human disturbance to specified locations. As the effects of historical disturbances diminish, many forest stands will recover to an essentially natural condition. This change in the pattern of human disturbances means that the potential area of old-growth forest is actually greater than its current area. Exclusion of 'unnatural' disturbance agents such as grazing, timber harvesting and inappropriate fuel-reduction burning from conservation reserves and the SPZ will allow recruitment of old-growth forest as the effect of past disturbances become negligible. The ratio of old-growth forest to that dominated by younger growth stages in these areas will then be determined almost solely by wildfire.

3.4 NATIVE FAUNA

As a result of extensive studies over the last decade or so, the vertebrate fauna of East Gippsland is perhaps better known than that of any other area of comparable size and vegetation type in Australia. This information has been reviewed and issues identified by Lugg *et al.* (1993).

The fauna conservation strategy has been developed in the context of conservation reserves, representative conservation of EVCs and old-growth forest (discussed earlier in this chapter), and the large areas of State forest unsuitable for timber harvesting. Together these provide a high level of protection for most significant fauna habitats and should cater for most forest fauna. For example, habitats supporting particularly rich or characteristic fauna, such as heathland, Warm Temperate Rainforest, Riparian Forest, Rainshadow Woodland, Rocky Outcrops, box—ironbark areas and wetlands, are well protected by the park system and the flora conservation strategy. Consequently this strategy concentrates on some key species that are threatened or are sensitive to timber harvesting. Appendix J lists threatened, sensitive and geographically limited faunal species in the East Gippsland.

Over the next 30 years or so, the timber industry will be in a state of transition—from being based on older forest to one based on regrowth. The main thrust of this strategy is to ensure that a suitable habitat network is retained as the ratio of older forest to regrowth decreases. The strategy has three elements:

- conservation guidelines for featured threatened and sensitive fauna.
- a network of linear reserves to maintain sensitive fauna populations across the forest landscape.
- modified timber-harvesting arrangements to retain high fauna values in the Special Management Zone.

Aims

- *Ensure that all indigenous fauna species survive and flourish throughout the FMA.*
- *Provide special protection for threatened and sensitive fauna species*

Guidelines for conservation of featured species

Conservation guidelines have been developed for threatened or sensitive species with major habitat requirements in State forest, and whose needs may not be fully met by other conservation strategies (featured species). These guidelines are intended as tools to help devise a network of protected habitat catering for all forest fauna in the FMA. They are not to form the basis of State-wide fauna management, as other Forest Management Areas may differ in their specific requirements and situations.

The purpose of the guidelines is to:

- provide planned protection for sensitive and threatened species in State forest to meet the requirements of the *Flora and Fauna Guarantee Act 1988* and the precautionary principle outlined in the National Forest Policy Statement.
- take account of the contribution of national parks and other conservation reserves towards meeting these requirements.
- initiate an orderly process for ongoing reconciliation of timber production with conservation of threatened species.

The guidelines for large forest owls and Long-footed Potoroo indicate the minimum number of individuals or minimum area of suitable habitat that will receive planned protection on public land. Where conservation reserves do not provide this, areas of State forest will be identified to fill the gap. Additional resources for these species will also persist in other parts of State forest. Guidelines for other species indicate a level of protection that, once reached, will 'trigger' a review of the guideline.

In applying the guidelines consideration will be given to the status of fauna records and the quality of habitat in the area. For example a well documented and substantial population of a threatened species warrants a higher priority for protection than an area of marginal habitat where the same species was incidentally recorded.

The guidelines are a step towards more comprehensive conservation strategies to be developed as more information becomes available. Preparation and implementation of Flora and Fauna Guarantee (FFG) action statements, for example, may supersede some guidelines. Chapter 8 provides a mechanism for progressive refinement of management guidelines.

Mammals

Conservation reserves, coupled with strategies for conservation of old-growth forest and large forest owls, contribute significantly to mammal conservation in the FMA. Additionally, linear reserves (see page 33) are designed to maintain resident populations of arboreal mammals across the forest landscape. However, some further measures are necessary to conserve key threatened species and areas of high mammal richness or diversity.

CONSERVATION GUIDELINE Mammals

Long-footed Potoroo. The management strategy (Saxon *et al.* 1994) and FFG Action Statement (Thomas *et al.* 1994) for this species will govern its management. Accordingly, 400–500 ha around confirmed sites will be protected. These will be sub-catchment units containing suitable habitat (includes rainforest, Wet Forest or Damp Forest). Timber harvesting, new roading and most fuel-reduction burning will be excluded. Areas identified in State forest will be included in the Special Management Zone (SMZ), or, in the Special Protection Zone (SPZ), where they coincide with other values.

Once 17 500 ha has been protected (which should be sufficient habitat for about 1000 individuals) new potoroo records may be used to adjust the zoning scheme (see Chapter 8). However, they should not create a net addition to the area of the SPZ or SMZ. The strategy will be reviewed in the year 2000 in the light of research currently in progress.

Some of the areas identified for Long-footed Potoroo conservation have been placed in the SMZ. This is in recognition of the fact that potoroos utilise regrowth forest and that carefully planned timber harvesting may be compatible with their conservation. Research on the species needs to be further advanced before any harvesting is permitted in these areas, however.

Spot-tail Quoll. This guideline builds on the FFG Action Statement for the species (Mansergh and Belcher 1992). Until further work on habitat requirements is completed a precautionary approach of protecting areas of undisturbed forest as foraging habitat will be adopted.

Approximately 500 ha will be protected within a 1500 ha area that includes the detection site. The aim will be to protect a network of areas within the likely home range of the animal recorded. The protected area may include conservation reserves, larger patches of SPZ, as well as stream buffers, steep slopes and areas unsuitable for timber harvesting. Preference will be given to riparian vegetation, and rock outcrops which may provide suitable denning areas. Known latrine and den sites will be protected along with a buffer zone of at least 200m radius. [Note: Due to considerations of scale, the network of protected areas cannot all be shown on Map 26].

Predator-control works involving the use of 1080 baits will only be undertaken in the vicinity of quoll detection sites as part of a threatened-species conservation program.

Once 50 sites have been identified, this guideline will be reviewed.

Cave-roosting bats. (Eastern Horseshoe Bat, Large-footed Myotis and Common Bent-wing Bat). All breeding and roosting caves and mines and known over-wintering sites will be protected by a buffer of about 100m and be included in the SPZ. Sites will not be publicised and visitors will generally be discouraged, except as part of planned interpretive activities.

Forest-dwelling bats. Where high densities (>10 individuals captured in one trapping session) of the threatened Eastern Broad-nosed Bats or Yellow-bellied Sheathtail-bat are recorded, approximately 100 ha of older forest in close proximity to the site will be included in the SPZ.

Once 20 sites have been identified, this guideline will be reviewed.

Dingoes. There will be no poisoning, trapping or snaring for dingoes in State forest except at endangered-species sites or adjacent to farmland carrying vulnerable livestock.

CONSERVATION GUIDELINE continued

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

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

Rich mammal sites. Well-documented sites that are particularly rich in mammal species will be included in the SPZ or SMZ wherever practical.

Birds

While most bird species are well catered for by other strategies - particularly representative EVC conservation - the Powerful, Sooty and Masked Owls warrant particular attention. These species are rare (CNR 1995 a) and have been listed under the *Flora and Fauna Guarantee Act 1988*. Their habitat often comprises extensive areas of forest with hollow trees that provide nest sites and support substantial populations of prey (especially possums and gliders). They defend large territories, in the order of 500 - 1000 ha. Consequently they are potentially sensitive to the effects of clear-felling and may be among the most difficult fauna to conserve in production forest. The methodology and basis of the owl conservation guideline will be detailed in a forthcoming report by A.D. McIntyre and S.R. Henry. Application of the guideline has made a major contribution to the SPZ and SMZ areas shown on Map 26. Flora and Fauna Guarantee Action Statements are being prepared for these species.

CONSERVATION GUIDELINE Birds

Powerful, Sooty and Masked Owls. Good-quality habitat to support at least 100 pairs of each species will be maintained in the FMA. The target of 100 pairs will be apportioned to Geographic Representation Units, according to the amount of suitable habitat in each unit (see Appendix J). Conservation reserves and State forest will both contribute to conservation of owl habitat. Areas that count towards meeting the target include:

- known owl localities in conservation reserves;
- parts of the SPZ and SMZ designed around known owl localities in State forest; and
- a conservative estimate of the extent of habitat in conservation reserves, or in larger parts of the SPZ and SMZ (based on other features such as old-growth forest).

Good quality habitat for a pair of each species is defined as follows (the home ranges of different species can overlap):

Powerful Owl habitat - approximately 800 ha of forest which is dominated by old trees. This species occupies a wide range of forest types, but areas with high populations of possums and gliders are favoured. Where the SPZ or SMZ is based on a known owl locality the 800 ha is to be located within a 1500 ha area of forest that includes the detection site.

CONSERVATION GUIDELINE continued

Sooty Owl habitat - approximately 500 ha of forest dominated by old trees and generally comprising Lowland, Damp and Riparian Forest, and Warm Temperate Rainforest. Where the SPZ or SMZ is based on a known owl locality the 500 ha is to be located within a 1000 ha area that includes the detection site.

Masked Owl habitat - approximately 500 ha including old, relatively undisturbed forest, woodlands and heathlands including Lowland and Riparian Forest, coastal woodlands and areas of natural forest edge such as heathland—forest ecotones. This species may be less dependent on older forest and arboreal prey than Powerful and Sooty Owls. The current strategy will be reviewed when a Flora and Fauna Guarantee Action Statement for Masked Owl is prepared.

All known nesting sites will be protected as for diurnal raptors.

Areas designated for owl conservation in State forest will be included in the SPZ or SMZ. The SPZ is appropriate when the area can help satisfy other conservation guidelines (like old-growth forest representation). It may also be appropriate in areas where there has been repeated reliable sightings and there are few conservation reserves or other large SPZs in the vicinity. The SMZ is appropriate where owls are the principal value recorded, and where reasonable representation of owl habitat already exists in conservation reserves or the SPZ. Sites in the SMZ will have special plans prepared that provide for a level of timber harvesting while conserving the most important components of owl habitat (see *Harvesting in the Special Management Zone* - p. 34). Appendix K and Map 25 provide a working example.

Once sufficient habitat for 100 pairs is being managed for owl conservation, new owl records may be used to adjust the zoning scheme (see Chapter 8).

Diurnal raptors. (Square-tailed Kite, White-bellied Sea-Eagle, Grey Goshawk, Peregrine Falcon and Little Falcon). All known nest sites will be included in Special Managements Sites with a 250-m radius around the site. Timber harvesting, road construction and fuel-reduction burning will be avoided in this area during the breeding season. At other times harvesting and road construction will be permitted to within 100 m of nest trees. Visitors will be discouraged and sites will not be publicised.

Glossy Black Cockatoo. A Flora and Fauna Guarantee Action Statement will be prepared for this species. It will include mechanisms to conserve stands of She-oak (*Allocasuarina littoralis*) which occur to some extent in State forest, and are the preferred food source of this species. In the interim, all substantial stands of She-oak will be excluded from harvesting, and nest trees protected as for diurnal raptors.

Rich bird sites. Well-documented sites that are particularly rich in birds will be included in the SPZ within areas of approximately 20 ha.

Reptiles and amphibians

The large areas of dry forest unsuitable for timber production, conservation reserves and strategies for representative conservation of EVCs should adequately conserve most reptile species in East Gippsland. Similarly, protection of the riparian environment through the Code and the network of linear reserves will protect the breeding habitat of most frogs. However, some species and values warrant specific consideration. The Giant Burrowing Frog, for example, may be vulnerable to disturbance associated with timber harvesting, as it burrows in the soil well away from watercourses, while the Southern Barred Frog has only been recorded at three sites in the FMA.

CONSERVATION GUIDELINE Reptiles and amphibians

Diamond Python. 100 ha of suitable habitat will be included in the SPZ for each confirmed locality of this species. Fuel reduction burning will be permitted provided a suitable mosaic of different aged habitat patches can be maintained. Precise locations of Diamond Python sites will not be publicised. A Flora and Fauna Guarantee Action Statement is being prepared.

When 50 sites have been located, this guideline will be reviewed.

Giant Burrowing Frog. The guideline for this species is consistent with its Flora and Fauna Guarantee Action Statement (Mazzer 1994). At all sites where Giant Burrowing Frog is recorded on first-order streams or at sites away from streams, approximately 50 ha (preferably a sub-catchment unit) will be included in the SPZ. Sites on second- or higher-order streams will be included in a linear reserve (SPZ) extending 100 m from each bank for one 1 km upstream and 1 km downstream from the detection site. Construction of new roads within these parts of the SPZ will be avoided.

When 50 sites (in Victoria) have been located, this guideline may be reviewed.

Southern Barred Frog. Interim guideline: As for Giant Burrowing Frog.

This species is a stream breeding frog with conservation requirements thought to be similar to the endangered Spotted Tree Frog (not known to occur in the FMA). A Flora and Fauna Guarantee Action Statement is currently being prepared for Spotted Tree Frog. The guideline for Southern Barred Frog will be reviewed when the Action Statement is complete.

Blue Mountains Tree Frog. High-density populations of this species (more than 50 individuals at a census site) will be included in a linear reserve (SPZ) extending 100 m from each bank for 500 m upstream and 500 m downstream from the site. Construction of roads will be avoided within the linear reserve.

When 20 sites have been located, this guideline will be reviewed.

Rich sites. Well-documented and particularly rich reptile or amphibian sites will be included within areas of at least 10 ha in the SPZ.

Fish

East Gippsland contains many streams supporting intact assemblages of native fish of high conservation significance. Most are protected in national parks, such as Mueller River and Peach Tree Creek in Croajingolong National Park, or in natural features zones, such as along the Bemm and Thurra Rivers.

CONSERVATION GUIDELINE Fish

Significant fish sites will be included in a linear reserve (SPZ) extending 100 m from each bank of the watercourse, for 1 km upstream and 1 km downstream of the site. Construction of new roads within the linear reserve will be avoided. Significant fish sites are defined as supporting one or more of the following:

- an extant population of Freshwater Herring (endangered), Australian Grayling or Cox's Gudgeon (vulnerable), or Mountain Galaxias (range severely fragmented in East Gippsland).
- three or more threatened species at the site.
- a rich assemblage of native freshwater fish (six or more species at the site).

When 50 significant fish sites have been located, this guideline may be reviewed.

Invertebrates

While the invertebrate fauna of East Gippsland is poorly known, some species and features warrant special attention. These include important breeding areas for rare butterfly species and the recently re-discovered Orbost Crayfish, which is apparently restricted to the Brodribb River headwaters.

CONSERVATION GUIDELINE Invertebrates

Butterflies. Important breeding and hilltop congregation areas will be included in the SPZ where they coincide with other values. Otherwise they will be included in the SMZ and disturbance from harvesting, roading or fuel-reduction burning planned to ensure that suitable food plants and key habitat values are maintained.

Crayfish. Sites supporting rare or threatened crayfish species and forest extending approximately 100m from each bank of the watercourse, for 1 km upstream and 1 km downstream of those sites will be included in the SPZ. Construction of new roads within these reserves will be avoided. When 20 sites of a given species have been located, this guideline may be reviewed for that species.

Linear reserves

A network of connecting linear reserves across the FMA is particularly important for conservation of sensitive fauna. The aim should be to maintain resident populations of most sensitive species within linear reserves and thereby facilitate re-colonisation of areas that are harvested or burnt by wildfire. A linear reserve network will also provide some of the habitat requirements of wider-ranging species (such as large forest owls) and help prevent genetic isolation of sensitive forest species.

To guard against the possible impacts of climate change the National Forest Policy Statement (Commonwealth of Australia 1992) proposes creation of corridor systems that '*link reserves, refuges and areas with a relatively large range of altitudinal and other geographical variation.....*' (p.9).

Linear reserves containing forest of good quality, about 200 m wide, should be sufficient to maintain resident populations of all possums and gliders, most bats and most forest-dependent birds, especially if adjacent areas are also forested. This is supported by studies that found resident Yellow-bellied Gliders in strips of retained mature forest (100 - 200 m wide) within 10 - year old native forest regenerating

following harvesting (Kavanagh and Rohan-Jones 1982), and within pine plantations (Recher *et al.* 1987). Yellow-bellied Gliders have social and foraging habits that make them likely to require the widest linear reserve of the species listed.

CONSERVATION GUIDELINE **Linear reserves**

A network of linear reserves will be maintained as part of the SPZ. Linear reserves will:

- provide a number of alternative links between conservation reserves and larger parts of the SPZ and SMZ.
- span altitudinal and latitudinal gradients.
- be an average of 200 m wide.
- generally comprise old forest containing high quality habitat.
- build on and complement existing Natural Features Zones, Heritage River corridors and stream buffers.
- Be located to reduce the impact of potential barriers such as the Princes and Cann Valley Highways.

Harvesting within the Special Management Zone

Many areas in the SMZ are designated for conservation of featured species (in particular Powerful, Sooty and Masked Owls) while allowing some timber harvesting to occur. Parts of the SMZ identified in accordance with the Long-footed Potoroo management strategy are unavailable for harvesting before the year 2000 when the strategy is due for review.

Within SMZ areas available for timber harvesting the aim will be to integrate harvesting and wildlife conservation *within the zone*. This will entail:

1. Identifying and protecting the areas of best habitat within the SMZ.
2. Allowing modified harvesting in areas of moderate habitat value using techniques such as:
 - retaining additional habitat trees and advanced regrowth on coupes.
 - avoiding hot slash burns that kill retained trees.
 - using mechanical disturbance as an alternative method of seedbed preparation to slash burns.
 - concentrating harvesting in areas of lower value to the featured species (for example, in a foothill forest where owls are the featured species, harvesting could be concentrated on ridges and upper slopes with progressively more-selective harvesting used toward the gullies).
3. Allowing normal harvesting in areas of least habitat value within a site.

Harvesting in the SMZ will also provide opportunities to test and evaluate methods of integrating wildlife conservation and timber harvesting at the coupe level.

ACTION:

Special plans will be prepared for each SMZ where harvesting is to be permitted. Harvested areas will be monitored for persistence of the featured species, survival of retained trees and the effects of retained trees on forest growth.

Appendix K and Map 25 provide an example of a Proposed Plan for a SMZ in Cabbage Tree Forest Block.

3.5 SITES OF BIOLOGICAL SIGNIFICANCE

Pre-logging flora and fauna surveys between 1983 and 1993 covered 36 of the 103 forest management blocks in the FMA. They have made a major contribution to the identification and conservation of biologically significant areas in East Gippsland, and have dramatically improved knowledge on the distribution and abundance of many species and communities. Conservation strategies in this Plan draw heavily on that information.

Survey reports usually delineated sites of biological significance and recommended that timber harvesting be excluded from them. However, a suitable process for assessing these recommendations and reconciling them with other forest management aims was lacking. As a result, sites of biological significance became *de facto* reserves, which grew in a fairly *ad hoc* manner as more surveys were completed. This Plan takes a fresh look at conservation strategies in State forest. Doing so necessitated a review of management of sites of biological significance, principally for the following reasons.

- As conventions for identifying sites of biological significance evolved, they tended to build on precedent, resulting in a lack of consistency between surveyed blocks.
- The status of some species and communities originally considered poorly conserved has changed, due to better data on distribution and the creation of new national parks and conservation reserves.
- Sites of biological significance were identified on a forest management block basis, with little consideration given to the reservation of features outside the study area.
- Not all of the values in sites of biological significance require exclusion of timber harvesting for effective conservation.

This Plan places all State forest into the General Management, Special Management or Special Protection Zone. The following process was followed to allocate sites of biological significance to these zones.

A preliminary draft of the Special Management and Special Protection Zones was drawn up by applying the conservation guidelines set out in this chapter. Not surprisingly, many sites of biological significance coincided with these zones. Sites of significance outside the draft SPZ or SMZ were further examined for values that may have been overlooked and warrant special consideration. Those qualifying for additional protection had:

- values poorly represented elsewhere in the Special Management and Special Protection Zones, or in conservation reserves.
- an aggregation of significant values not individually warranting conservation guidelines.

Areas not qualifying for further protection were those with values that were:

- significant locally but not in the broader context of their respective geographic representation units.
- not considered sensitive to timber harvesting, or amply protected by harvesting prescriptions.
- adequately catered for by other parts of the zoning scheme in accordance with the conservation guidelines.

Chapter 4

FOREST PRODUCTION

4.1 HARDWOOD TIMBER SUPPLY

Forests in the FMA supply about one-third of Victoria's annual hardwood sawlog harvest and are the mainstay of the local economy. The timber industry is also responding to increased security of supply and has undertaken investments in kiln-drying facilities and improved sawmill technology. The value-adding potential of East Gippsland timbers is being increasingly recognised, and markets are being sought for residual logs harvested as a by-product of sawlog harvesting. For developments of this kind to continue, there must be certainty about the area of native forest available for timber production.

This Plan identifies the area of State forest available for timber production, within a framework designed to conserve other forest values, and establishes some clear rules for reviewing these in an orderly manner. Together with the AHC/CNR joint national estate project, and the old-growth forest study, the Plan will fulfil a number of the key requirements of the National Forest Policy Statement. This, in turn, will provide greater resource security for the development and growth of an ecologically sustainable timber industry.

Aims

- *Provide a sustainable supply of hardwood sawlogs to the timber industry.*
- *Manage each forest type with the long-term aim of achieving a balanced age structure.*
- *Integrate harvesting of different forest products to maximise utilisation of material from areas harvested for sawlogs.*

Available area

The area of public land that is set aside as State forest and which is available for timber production (among other things) is determined by the Victorian Government through the LCC process. Within this area, forest can be made unavailable for timber production for management reasons (eg by placing it into the SPZ) or it can be unsuitable because it is inherently unproductive (generally less than 28m potential height). Forest that is available and suitable for timber production is termed the "net productive area". The net productive area data used in this Plan are taken from HARIS (1993) which is a compilation of timber resource inventory data from projects conducted over many years. Most timber harvesting will occur in the General Management Zone, which has an estimated net productive area of 332, 600 ha (32% of public land in the FMA).

An estimated additional 22,400 ha (2% of public land in the FMA) in the Special Management Zone (SMZ) will also be available, subject to the conditions specified in Sections 2.3 and 3.4. The net productive area of the SMZ is still to be estimated.

Ideally, the accessible net productive area to be managed for timber production would be mapped and zoned separately as 'commercial forest'. Currently this is not feasible because forest stands and their accessibility are not mapped to a sufficiently accurate or consistent standard. Only field reconnaissance can finally determine whether or not a given area is suitable for harvesting.

The Department is currently conducting a comprehensive inventory of Victoria's timber resources. The study, known as the Statewide Forest Resource Inventory (SFRI), is progressively working around Victoria. By the year 2000 the standing timber resources and growth potential of State forest in East Gippsland will have been reviewed. When complete, the Department will be in a better position to map the 'commercial forest' and to refine forecasts of sustainable harvesting yields. An additional benefit will be identification of 'non-commercial' forest which in some cases may be re-zoned to support and consolidate existing conservation areas.

Appendix M provides statements of net productive area and available timber volumes.

ACTIONS:

The Department will complete the Statewide Forest Resource Inventory covering East Gippsland. This will facilitate the definition of commercial forest in the FMA.

Sustainable yield

Following the Timber Industry Strategy (Government of Victoria 1986), and additions to national parks in East Gippsland in 1987, the sustainable yield for the FMA was forecast at 179 000 cu.m of sawlogs (C grade or better) per year for the period 1988 to 2003. Fifteen-year licences were granted to sawmillers guaranteeing a supply of sawlogs in accord with the forecast sustainable yield. This was a substantial reduction from previous sawlog intakes. Most licensees chose to phase down to the new level by taking a higher proportion of their allocation in the beginning of the licence period and less towards the end.

In 1990 a number of areas on the Register of the National Estate were withdrawn from timber production and added to national parks. As a result, the sustainable yield was reduced to 174 000 cu.m of sawlogs (C grade or better) per year. This then became the legislated sustainable yield. As 15 year licences had previously been issued based on a sustainable yield figure of 179 000 cu.m, it was decided at that time that any adjustment to licensed levels would be made when the licences were reviewed.

Under this Plan, some 164, 300 ha of SPZ and 37, 900 ha of SMZ are set aside for the conservation of non-timber values (see Table 1, page 8). Current forecasts nonetheless show that the available area of State forest is sufficient to supply existing licence commitments, and maintain ongoing supplies at the currently legislated level of 174 000 cu.m of sawlogs (C-grade or better) per year. The reasons for this are as follows:

- a review of timber resources in the FMA (HARIS 1993) showed earlier estimates of the net productive area and standing timber volumes in State forest to be conservative.
- commercial thinning of older regrowth forest stands will enhance the growth rates of retained trees and produce sawlogs prior to 2030 (see Section 4.2). After this time, regrowth forests will be able to supply most of the sawlog resource.

Low volume forest

Productive forests that currently carry a lower volume of sawlogs due to a history of selective harvesting, wildfire, or dieback (see Section 4.2) are termed low volume forests. Harvesting in low volume forest produces a high proportion of small or defective logs (residual logs - see next section). There are currently insufficient markets for all of the residual logs produced by sawlog harvesting in the FMA and without improved markets some of the lowest volume forest may prove to be unsuitable for sawlog production. These areas are currently considered as part of the commercial forest and consequently contribute to sustainable yield estimates. If however they remain unharvested, there

would be pressure to harvest more productive forest areas at above their sustainable rate, in order to maintain current supply levels. While this situation is unlikely to cause significant timber supply problems within the life of this Plan, it has the potential to cause a shortfall in sawlog supplies in about 20 years. The solution is to find markets for residual logs (see next section) or to exclude some areas of low volume forest from the commercial forest area.

ACTIONS:

The net productive area of the GMZ (and the available portion of the SMZ) will continue to be managed to maintain a sustainable, non-declining supply of sawlogs.

The Department will produce a technical report in 1996 outlining the basis of the sustainable yield calculations for the East Gippsland FMA.

Future reviews of sustainable yield will take into account the prospects for sale of residual logs.

Residual logs

Residual logs are those that are either too small or too defective to meet current sawlog specifications. Currently approximately 650 000 cu.m of residual logs become available each year as part of normal sawlog harvesting operations. While some of this is sold through residual-log licences, most is not utilised. Furthermore, the quantity of available residual logs will increase as larger areas of low volume forest are harvested to meet sawlog licence commitments. Integrated harvesting, in which all material produced during the logging operation is utilised, would provide greater economic returns, improve harvesting efficiencies and broaden the options for silvicultural treatment of low volume forests.

In the absence of substantial markets for residual logs, a large proportion of potentially unmerchantable trees will remain in many coupes and cause silvicultural problems. Foremost is the competitive effect these trees can have on the growth of young trees.

ACTIONS:

The Department will continue to actively research and develop new markets for the sale of residual logs.

Residual log licensees will be directed to those coupes in which the removal of residual material will confer the maximum silvicultural advantage.

Forest types

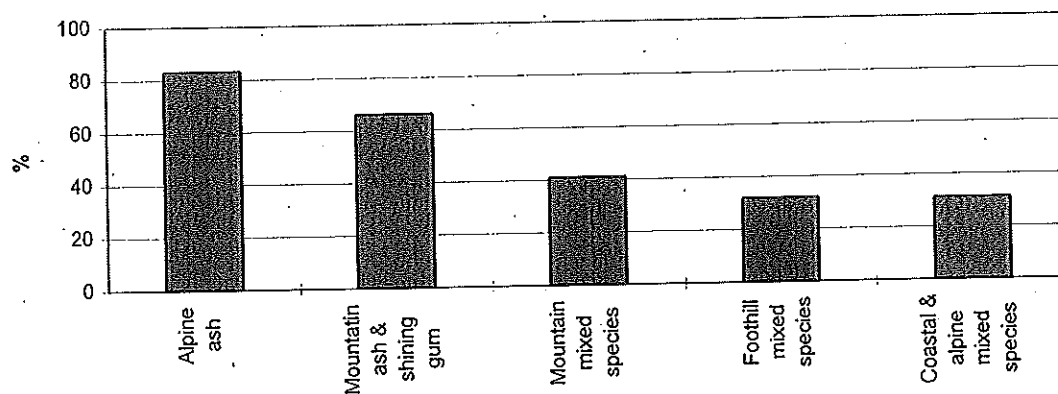
In addition to sustainable management of the net productive area, it is desirable to spread timber harvesting across forest types and stand qualities. This enables a relatively even flow of forest products of different species and grades to the timber industry.

Since the 1960s, timber harvesting has been concentrated in the more productive high-elevation forest types. In the 1980s large, un-harvested areas of these forest types were included in the Snowy River and Errinundra National Parks. Consequently, State forest contains a disproportionate amount of regrowth in these forest types. On the other hand, the mature and overmature forests from which sawlog supply commitments are to be met include a disproportionate amount of low-elevation forests that yield low sawlog volumes (see Figure 7). If timber harvesting continues to be concentrated in the most productive forest stands, there is a risk that the less productive areas that are left may not be viable in their own right.

The remaining mature and overmature forests in high-elevation forest types also yield a higher proportion of high grade sawlogs with potential for value-adding. As the timber industry continues to diversify and improve its value-adding performance, the potential value of these logs will increase. It is important, therefore, to ensure that harvesting of this resource in the short term is not at the expense of longer-term value-adding opportunities.

Management aimed at producing a more balanced age structure within each forest type will maximise sustainable yield levels in the longer term.

Figure 7. Proportion of regrowth in different forest types for the net productive area (GMZ and available SMZ)



MANAGEMENT GUIDELINE Target areas to be harvested by forest type

Each forest type in the FMA will be harvested at a rate enabling a relatively even flow of logs of different species and grade to be maintained. Table 4 indicates the approximate area and volume to be harvested in each forest type for the period of this Plan. This schedule will facilitate creation of a balanced distribution of age classes in each forest type and consequently maximise sustainable yield in the long term.

Table 4. Targets for the average area and sawlog volume to be harvested annually in each forest type

Forest Type	Period of this Plan 1996-2006		
	Area (ha/yr)	Volume (cu.m/yr)	Average yield (cu.m/ha)
Alpine Ash	40	4 000	100
Mountain Ash & Shining Gum	30	4 000	133
Mountain Mixed Species	1 600	70 000	44
Foothill Mixed Species	3 490	70 000	20
Coastal Mixed Species	2 330	26 000	11
Total	7 490	174 000	23

Explanatory notes:

1. Information in this table is based on HARIS (1993) which is a compilation of data current in 1991, and from logging history records (1991-1995).
2. Volume estimates are for A, B and C grade sawlogs (C+).

Application of this guideline will shift the general emphasis of timber harvesting towards low elevation, low volume forests for the next 30 years or so. This is the optimum regime for maximising the long term supply of sawlogs but it depends on the availability of markets for residual logs.

Specialty timbers

Species such as Red Ironbark (*Eucalyptus tricarpa*), Red Box (*E. polyanthemos*), Blackwood (*Acacia melanoxylon*), Silver Wattle (*A. dealbata*), Black Olive Berry (*Elaeocarpus holopetalus*) and Southern Sassafras (*Atherosperma moschatum*) produce timber with attractive colour and figure, making them sought after for use in furniture and for woodturning.

Interest in specialty timbers has been increasing in recent years, and 450 cu.m are currently supplied annually under specialty timber licences. Craftwood licences are also issued for smaller quantities. Although the available volumes are small compared with other species, interest in these timbers draws attention to the quality and potential of all East Gippsland timbers.

Specialty timbers become available in small quantities during sawlog harvesting and road construction. Timber resource information for the FMA is neither species-specific nor precise enough to determine sustainable yields for specialty timbers. It is therefore prudent to consider them as a by-product of sawlog harvesting, and to issue licences accordingly.

In the past, Southern Mahogany (*Eucalyptus botryoides*) has been considered to be part of the general sawlog resource for the FMA and not a specialty timber. However, this species makes only a small contribution to the sawlog resource (less than 500 cu.m annually), while it has great potential for specialty uses.

ACTIONS:

Specialty timbers produced during normal sawlog-harvesting operations that are surplus to licence commitments will be offered for sale by tender. Should surplus volumes of some species be consistently produced, expressions of interest in longer-term licences will be called for. Craftwood licences for small volumes will continue to be issued. Licences will specify that the timber be taken from existing logging coupes and road alignments.

Southern Mahogany will be added to the list of specialty timbers for the FMA and a small volume offered for long-term licence.

4.2 SILVICULTURE

Silviculture is concerned with the treatment of forest stands to achieve management aims. Treatment can include harvesting, regeneration and tending operations such as thinning and browsing control. Combined, the treatments form a system that can manage the structure, composition and growth of a stand. Flexible silviculture provides scope to vary the types and patterns of trees retained in coupes, and the volume of timber removed. Guiding principles for its application in State forest are set out in the Code of Forest Practices for Timber Production (Code).

To be economically feasible at an operational scale, silviculture needs to be integrated with timber-harvesting operations. The current lack of markets for residual logs places constraints on silviculture in the FMA. For example, unmerchantable trees left standing in coupes suppress regrowth and can only be felled at a cost to the Department. The economics of rehabilitating low volume forest areas without a market for residual logs is also marginal. While this situation persists, it will be important to supply the limited market from areas that offer the optimum silvicultural advantages.

Aims

- *Maintain or improve the productive capacity of the net productive area consistent with the Code of Forest Practices for Timber Production.*
- *Use silvicultural treatments and prescriptions that are economically and environmentally sound.*
- *Improve the sawlog potential of low volume forests by appropriate silvicultural treatment.*

Regeneration

Adequate regeneration and subsequent growth is fundamental to sustainable timber production. The Code requires the Department to regenerate native forest coupes following timber harvesting. Over the 4 years 1989–1993, 92% of the area harvested in the FMA was adequately regenerated at the first attempt, and an additional 2700 ha of under-stocked forest was successfully re-treated (Murphy 1995). It is unlikely that regeneration treatments will ever be 100% successful at the first attempt, particularly in the high-elevation mixed-species and ash forest types. In these areas factors such as inclement weather, frosts, competition from grass, and browsing by native animals can disrupt seedbed preparation, seed germination and survival of young seedlings. This situation is manageable so long as inadequately stocked areas are successfully re-treated in subsequent years and that the backlog of areas requiring re-treatment does not become too large. In 1990, approximately 4400 ha of forest in the FMA was understocked. This has since been reduced to approximately 1500 ha.

The clear-felling and seed-tree systems remain the best techniques for regeneration of harvested areas in the FMA. Close adherence to silvicultural prescriptions, systematic monitoring of regeneration success and ongoing treatment of coupes that have failed to regenerate will ensure that all harvested areas are successfully regenerated.

MANAGEMENT GUIDELINE Regeneration

The net productive area of the GMZ will continue to be managed on an even-aged basis using the clear-felling and seed-tree systems.

Seed collection will be undertaken to build up and maintain adequate stocks of seed for regeneration and re-forestation operations.

Seedling surveys will be conducted following regeneration treatment in accordance with Departmental regeneration survey guidelines.

All understocked coupes from current operations will be re-treated within five years of the initial treatment.

ACTION:

Coupes from earlier harvesting that have failed to regenerate adequately will be re-treated at a rate of 200 - 300 ha per year in addition to the normal regeneration program.

Alternative silvicultural systems

The Department's Silvicultural Systems Project (SSP) is comparing several alternatives to the clear-felling and seed tree systems currently used in East Gippsland. This has created an expectation that alternative systems will become available for operational use. However, an interim evaluation of results from SSP trials in Mountain Ash forest in the Central Gippsland FMA (Campbell 1995) and preliminary results from East Gippsland (P. Geary pers. comm.- Research Officer, Centre for Forest Tree Technology, Orbost) have shown that, where timber production is a high priority, improved clear-felling and seed-tree systems are likely to be the most appropriate. Other systems are being developed and may be suitable where specific flora, fauna, landscape, water or other values take precedence.

ACTIONS:

Silvicultural prescriptions for use in the GMZ will continue to be reviewed and revised in the light of research findings and operational experience. Alternative silvicultural systems will be used where a higher regeneration success rate can be assured or where values other than timber production have priority.

Techniques for timber harvesting in the SMZ will be considered on a case-by-case basis. Where current harvesting systems are deemed inappropriate, smaller coupe sizes, retained overwood systems and uneven-aged systems will be considered.

Research studies in the high elevation mixed species forest type, aimed at improving regeneration success, will be maintained.

Low volume forest

Large areas of Lowland Forest and Limestone Box Forest in the lowlands of the FMA have a long history of selective harvesting for sawlogs and minor produce. The better quality merchantable trees have been removed from these forests, particularly species producing durable timbers such as Red Ironbark (*Eucalyptus tricarpa*), Gippsland Grey Box (*E. bosistoana*), Red Box (*E. polyanthemos*), Blue Box (*E. baueriana*) and Yellow Stringybark (*E. muelleriana*). Poor regeneration of these species and the prolific seeding and early rapid growth rates of Silvertop Ash (*E. sieberi*) and White Stringybark (*E. globoidea*) have altered the forests' species composition (Featherston 1985). In addition, the effects of wildfire and dieback from Cinnamon Fungus (*Phytophthora cinnamomi*), have further degraded many thousands of hectares of lowland forests in the FMA. In their current condition they carry low sawlog volumes and have little capacity to achieve their potential in sawlogs unless rehabilitation works are undertaken. Maintaining sawlog supplies, optimising long-term forest productivity and conserving box and ironbark species depend on restoring the health and diversity of these forests.

MANAGEMENT GUIDELINE Low volume forest silviculture

The species composition and productive capacity of low volume forest will be progressively restored by:

- preventing further areas from being affected by dispersed harvesting of minor forest produce. To this end, minor forest produce coupes will be specified on Wood Utilisation Plans. Commercial cutters of firewood and posts will be directed to these coupes. Integrated harvesting will be used to ensure that the available forest produce is fully utilised. The coupes will then be regenerated with their original species mix.
- using the following silvicultural techniques to ensure regeneration of species that yield durable timbers:
 - use of seed-tree regeneration systems, giving preference to retaining desired species.
 - cutting stumps of desired species to a maximum height of 30 cm, to encourage coppice growth.
 - supplementary planting and sowing where necessary.
 - removing unproductive trees of the less-preferred species to remove overwood competition.
 - thinning of advanced regrowth.
- harvesting and regeneration of degraded areas to restore their original species mix. As markets become available, an increasing proportion of sawlog licence commitments will be met from low-volume forests. Ideally, over the next 10 years, the annual area harvested in foothill and coastal mixed species should average 3490 ha and 2330 ha respectively (see Table 4).

Regrowth management

From early next century, an increasing proportion of sawlog supplies will come from regrowth forest. Silvicultural treatment of selected regrowth stands has considerable potential to influence the volume, quality and harvest-time of this supply.

Harvesting of mature and overmature forests should maintain a steady supply of sawlogs to the timber industry until about 2030. By then, regrowth forests originating from wildfire and timber harvesting in the 1950s, '60s and '70s will begin to carry merchantable sawlog volumes and reach an age suitable for harvesting. Sustainable yield will then probably increase due to the greater productivity of the regrowth forests. Sawlog supplies are therefore most tightly constrained in the period from now until 2030. Forecasts show that sawlog supplies can be maintained near their current levels through this period given suitable markets for residual logs. Silvicultural treatment of some regrowth stands will enhance sawlog production in selected areas and therefore help secure an even sawlog supply during the transition period. The key types of regrowth silviculture are pre-commercial treatments, commercial regrowth thinning and timber stand improvement.

Pre-commercial treatments

These include the control of stocking through seed supply, early thinning and possibly fertilisation. These treatments have been the subject of recent research and have the potential to make significant productivity gains. However, they could not produce sawlogs in the period when supply will be most limited. Further work is also needed to develop suitable prescriptions and quantify long term growth responses and costs.

Commercial thinning of regrowth

Thinning is a silvicultural practice used to enhance diameter and volume growth of selected trees by removing others unlikely to grow into sawlogs. Secondary goals are to salvage useful wood from trees that would otherwise die through suppression, and to produce a financial return early in the life of a stand. Regrowth thinnings yield a high-grade pulp for paper-making and have potential as feedstock for production of reconstituted-wood products.

Commercial thinning has been under way for four years in the FMA, and approximately 200 ha of coastal and foothill regrowth forests are treated annually. If thinned in the next 10 years, older regrowth stands (of pre-1980s origin) can produce sawlogs before 2030 as a result of increased growth rates. Appendix L includes a list of the available regrowth resource in the FMA. While a large area carries pre-1980s regrowth, only a small proportion is currently suitable for commercial thinning because of poor merchantability, site quality or operational constraints.

The following points are relevant:

- To be viable for commercial thinning, stands should have a basal area of at least 30 sq.m of regrowth per ha and less than 8 sq.m of overwood per ha. This means most viable stands in Low Elevation Mixed Species forests are 20-30 years old.
- Large areas of regrowth occur in areas of low site quality that would not produce optimal growth responses.
- Existing harvesting technology places operational constraints on thinning of regrowth stands on slopes greater than 18° or with substantial amounts of large-diameter log debris on the ground.

Taking these factors into account, approximately 4500 ha of foothill mixed-species forest originating from wildfire or logging in the '60s and '70s are suitable for thinning over the next 10 years. These areas (indicated on Map 26) are concentrated around the Jirrah, Cabbage Tree and Purgagoolah Forest Management Blocks, which have the additional advantages of good roads and being close to the Princes Highway. A thinning program in these blocks could result in future production of approximately 450 000 cu.m of sawlogs (C grade or better) between 2018 and 2038.

Timber stand improvement (TSI)

TSI operations involve selective removal of mature and overmature trees from established stands of regrowth, with the aim of releasing the regrowth from competition. This increases the sawlog-producing capacity of selected forest stands by removing some of the overwood. It can also produce a small quantity of sawlogs, but tends to produce more residual logs. More widespread use of TSI is currently constrained by the small residual-log markets.

ACTIONS:

Intensive regrowth management will be permitted in the GMZ and parts of the SMZ where it does not conflict with other aims. For the next 10 years it will be concentrated in the area shown on Map 26. This area has high site quality, contains large areas of regrowth of a suitable age, is well serviced by roads and is close to the Princes Highway.

The current program of commercial regrowth thinning will continue. If the opportunity arises, it will be expanded to treat approximately 500 ha of suitable forest each year.

Timber stand improvement operations will continue to be applied to selected stands where they confer the maximum silvicultural advantages.

Techniques will be further explored for combining regrowth thinning and TSI techniques where appropriate.

Eucalypt plantations

Eucalypt plantations have been promoted as being able to provide some or all of the wood products currently harvested from native forests in Victoria. In East Gippsland the land base potentially available and suitable for eucalypt plantations (that is, cleared farmland) is less extensive than in other parts of Victoria. The potential of such plantations to supply high-quality sawlogs is being investigated. Extensive research trials are in place on a wide range of sites in East Gippsland and these have started to provide good information on establishment procedures and species/provenance selection. The future role of plantations in supplementing native forest supplies of both sawlogs and residual roundwood should not be underestimated. The research and development trials should be used to guide management decisions on the establishment of eucalypt plantations in the FMA.

In East Gippsland there is probably more scope for intensive management of selected areas of native forest regrowth for timber production, than existing for establishment of plantations of introduced species on private land (see previous section).

ACTION:

The current eucalypt plantation research program will continue, with progress reports on growth and yield due by 1996 and 2000.

4.3 OTHER FOREST PRODUCE

Forest products other than sawlogs or residual logs include firewood, fencing material, tree ferns, seed, extractive materials and honey.

The history of harvesting these products in the FMA has, until recently, been one of largely uncontrolled selective felling. A considerable body of evidence now shows that this did not provide for adequate regeneration, particularly of durable timber-yielding species, and has degraded substantial areas of forest. Over the past decade or so some important steps have been taken to improve control over these operations, including the phasing out of sleeper-cutting licences, closer supervision and, in some areas, the imposition of quotas or moratoria on the harvesting of certain species. Management guidelines for silviculture in low volume forest (see previous section) should further reduce the impact of these operations and begin rehabilitation of affected areas.

The level of such harvesting in the FMA is low, due to the small local market and long distances to major markets. Sustainable harvesting rates for these products have not been estimated, but current rates are almost certainly well within the productive capacity of the forest. Wherever possible, harvesting of these products will be integrated with other forest operations, such as sawlog harvesting and road construction. This integration will contain the impacts, reduce supervision requirements, efficiently utilise harvested areas and provide an indication of sustainable harvesting rates.

Aims

- *Provide for sustainable supplies of other forest produce as well as sawlogs.*
- *Restore the proportion of species that produce durable timbers in forest affected by past selective harvesting.*

Firewood

Collection of firewood presents some management problems, including illegal collection and degradation of forest habitat close to settled areas. Its small and irregular nature and a preference for collection on weekends can make supervision difficult.

ACTIONS:

Firewood collection will be permitted in nominated parts of the GMZ (and in the SMZ if it helps achieve management aims). Felling of trees will only be permitted as part of the silvicultural treatment of designated coupes.

Firewood permits will be made available through local retail outlets, to enable their issue during weekends, and will include a map of available areas. Areas for commercial collection will be identified on the annual Wood Utilisation Plan.

Posts and other hewn timbers

While a small number of commercial cutters supply posts and other hewn timbers to the local market, many land-owners have traditionally met their own requirements from forest close to their properties. This practice is partly responsible for the degradation of lowland forest areas, because operations have been selective, with preference given to harvesting of species yielding durable timbers, and have

included little or no attempt at regeneration. These problems can be avoided in commercial operations because licensees must have a Forest Operator's Licence, conform to the Code and operate within designated coupes.

ACTIONS:

Spot-mills will not be permitted to operate in State forest because of fire risks, and difficulties in site rehabilitation and ensuring the satisfactory disposal of residue.

Post cutters must have a forest operators licence and operate in designated coupes according to a coupe plan. Exceptions may be made at the discretion of the Senior Forester.

The cutting of species yielding durable timbers will only be permitted from forest with low potential for sawlog production, and providing the area can be adequately regenerated.

Selective harvesting will only be permitted if it improves the growth of retained trees, and leaves the site adequately occupied by trees of the desired species composition.

Commercial cutting of firewood in conjunction with post cutting operations will be encouraged.

Apiculture

Coastal and foothill forests containing box, ironbark and stringybark species are traditional areas for honey production. Approximately 30 temporary bee-farm site licences of 0.5 ha in area are issued each year in the FMA. Concern has been expressed about the possible harmful effects that bees may cause by competing with native nectar-feeding species or altering the pollination processes of native plants. Accordingly, a cautious approach to this issue is taken in national parks, where apiculture is restricted or excluded. Lugg *et al.* (1993) describe apiculture in the FMA and current management arrangements for State forest. Changes to these arrangements are not considered warranted.

Extractive materials

These include rock, gravel, sand, clay and soil, which are mainly used for construction and maintenance of roads in the FMA. Users include CNR, VicRoads, the local shire council and a number of businesses. The resource is not renewable and should be used conservatively.

The cost of hauling gravel for road works becomes prohibitive at 20 km, making it necessary to maintain a network of regularly spaced gravel-pits across the FMA. The Department is currently rationalising the number of gravel-pits and quarries on public land. This will result in a reduction in the number of pits open at any one time.

Quarries and pits can affect other values (especially landscape and water quality) if poorly located and managed. Movement of *Phytophthora*-infected gravel during road and bridge construction has been listed as a potentially threatening process under the *Flora and Fauna Guarantee Act 1988*.

ACTIONS:

All operational extractive sites will have a working plan detailing procedures for stockpiling of topsoil, utilisation of available material, public safety, rehabilitation works and protection of landscape values. Extractive sites that are no longer required will be closed and progressively rehabilitated. New sites will not be permitted in the SPZ.

The spread of Phytophthora will be controlled by avoiding the transport of extractive materials from known infected sites to other forest areas. A Flora and Fauna Guarantee Action Statement will be prepared in 1995/96 that identifies mechanisms for controlling the spread of Phytophthora.

Stock-grazing

Cattle grazing licences cover about 85 000 ha of State forest in the FMA. These are issued on an annual basis and renewed in October each year, or on a three-monthly basis for seasonal bush grazing. Sub-alpine leases are generally more highly valued than those in foothill areas, as they offer better grazing potential. Most of the FMA is unsuitable for grazing due to dense forest cover.

While grazing licences in State forest often cover large areas, stock movements and grazing pressure are usually localised. In most cases the grazing pressure is very low. A review of grazing licences during preparation of this Plan identified Grey Box Woodland at Noorinbee as the only locality where current stock grazing may conflict with the values of the area.

ACTIONS:

Grazing of domestic stock will only be permitted in State forest where it does not pose unacceptable risks to forest values (like flora and fauna, soil stability, or water supplies) or disrupt other forest uses (like timber harvesting, establishment of regeneration, or recreation).

The current grazing licence covering SPZ 873/2 & 873/3 in the Noorinbee area will be monitored to ascertain whether or not grazing is having a deleterious effect on Herb Rich Forest (Gippsland Grey Box Woodland) in the area.

Tree-ferns

Harvesting of tree-ferns from public land has not generally been permitted in Victoria, although exceptions have been made where the plants faced permanent destruction—for example by road clearing. The main species suitable for harvesting is the Soft Tree-fern (*Dicksonia antarctica*) which is common in timber production areas in the FMA.

ACTION:

In accordance with relevant CNR policies, tree-fern salvage will be permitted on road alignments, coupe access roads, log landings and areas approved for permanent vegetation clearance.

Minor forest produce

A small demand exists for forest products such as the seed of eucalypts and understorey species, cut flowers and live plant specimens. The Department also employs contractors to collect seed for regeneration of logging coupes. A wide range of plant species can only be taken from public land with a suitable Flora and Fauna Guarantee permit. A permit for harvesting of minor forest produce and payment of a royalty are also usually required.

ACTION:

Collection of seed and other minor forest produce will be restricted to the GMZ unless it coincides with road construction or activities that are compatible with management aims of the SMZ and SPZ. Current arrangements for issuing of permits and payment of royalties will continue.

Chapter 5

FOREST PROTECTION

5.1 FIRE MANAGEMENT

Fire has long been a major influence on East Gippsland's forests and large, intense wildfires are a recurring feature of the environment. Although some may be deliberately lit or accidentally caused by humans, wildfires in the FMA are mainly due to lightning. The Department of Conservation and Natural Resources has statutory duties to "*carry out proper and sufficient work for the prevention and suppression of fire in every State forest and national park, and all protected public land.*" (Section 62(2), *Forests Act 1958*.) Fire is also used to prepare seedbeds for forest regeneration, to manipulate plant and animal habitat and to reduce fuel loads as an aid to wildfire control.

Fire management on public land in the FMA is governed by the regional fire protection plans for Orbost (Bartlett 1990) and Bairnsdale (Long 1990). This Plan, therefore, does not address fire management in detail. The purpose of this Section is to outline principles for ensuring that this Plan and the fire protection plans are complementary.

Aim

- *Ensure that management strategies established in this Plan are complementary to those in the fire protection plans covering the FMA.*

A key element of fire plans is a zoning system for fuel-reduction burning, designed to help protect life, property and public assets. Maintenance of low fuel levels in strategically located zones will ensure that fires that start within, or spread into, these areas should burn at a lower intensity and be easier to suppress than those in areas with high fuel levels.

Frequent fuel-reduction burning may, however, adversely affect certain biological values or kill young regrowth resulting from previous fires or timber harvesting. To some extent these issues have already been considered in the fire plans. Burning zones were located to avoid adverse effects on significant biological values and to minimise constraints on timber harvesting where possible. Fuel-reduction burning strategies have also been modified in response to management plans for the Errinundra, Snowy River and Croajingolong National Parks (CFL 1989b, CNR 1993a, CNR 1993b) and for heathlands (Avis 1993). Further refinements in response to this Plan will ensure that fire protection is well integrated with other public-land management aims across the FMA.

The fire protection plans establish five zones for fuel-reduction burning, which are briefly described below. Priority 1 and Priority 2 zones are indicated on Map 26.

Priority 1. Concentrated around major population centres and areas where visitors congregate, this zone has the highest priority for fuel-reduction burning. The aim is to maintain fine-fuel levels below 8 tonnes per ha, which would usually mean a burning rotation of about 3–5 years, although the time depends on the rate of fuel accumulation.

Priority 2. This zone comprises strategic corridors of sufficient width (generally 3 km) and continuity to provide a barrier to the spread of wildfire, to reduce fire intensity and damage and to provide a base for fire suppression. The aim is to maintain fine-fuel levels below 12 tonnes per ha, which approximates to a burning rotation of 5–8 years, although this varies considerably with different rates of fuel accumulation.

Priority 3. Broad area protection burning in this zone is conducted to support other zones. The aim is to maintain a mosaic of strategically important areas in which fine-fuel levels remain below 12 tonnes per ha. The goals and practices within this burning zone are flexible enough to be compatible with other forest management requirements.

Priority 4. This zone resembles the Priority 3 zone except that it is known to contain sensitive values (like ground parrots or significant rainforest areas). The aim is to reduce fuel levels to support other zones while ensuring conservation of special values. While the Priority 4 burning zone is compatible with forest management zones, it should be updated to complement this Plan and take account of new information that has recently become available.

Priority 5. This zone comprises vegetation (such as Wet Forest) unsuitable for fuel-reduction burning and is therefore compatible with forest management zones.

ACTIONS:

Fire protection and management works will continue to be carried out in accordance with the fire protection plans covering the FMA. These will be reviewed in 1995, when amendments proposed in this Plan (see Appendix N) and the Heathland Management Plan (Avis 1993) will be addressed. Improved strategies for protecting high-value regrowth stands and thinning areas will be included.

In the Priority 1 burning zone, fire protection will take precedence over other activities. The SPZ and SMZ are designed to minimise overlap with it. Clear fall harvesting will generally be excluded because regeneration cannot withstand the prescribed fire regime.

The SPZ and SMZ are designed to have minimal overlap with Priority 2 zones. Where overlap cannot be avoided, management of each area will be considered on a case-by-case basis. In some instances the prescribed fire regime will be compatible with the values of the area, while in others amendment to the fire plan will need to be considered. In certain key areas (for example, close to settlement), fire protection will take precedence over other values. Appendix N lists areas of overlap and how they should be managed.

Clear fall harvesting will be permitted in Priority 2 zones, provided an average of no more than 1% of a corridor is harvested in any one year. This means that up to 15% of a corridor could be regrowth forest less than 15 years old and would need to be excluded from burning operations.

5.2 STREAM AND CATCHMENT VALUES

Streams and catchments in the FMA include some of the most pristine in Victoria (DWR 1990, LCC 1991a). The least disturbed are mostly within national parks. Catchments in State forest are used for a range of uses including conservation, timber production, and water supply. Protection of the stream environment, control of soil erosion, and maintenance of water quality are vital if these activities are to be compatible and sustainable.

Aims

- *Maintain biological values associated with rivers and streams.*
- *Minimise degradation of catchment values associated with forest management activities.*
- *Ensure surface water quality is suitable for current and likely future water supplies.*

Code of Forest Practices for Timber Production

The Code of Forest Practices for Timber Production (Code) includes measures to minimise soil erosion and preserve water quality in forest areas. These include:

- standards for the design, construction, maintenance and rehabilitation of roads, tracks, bridges, log landings and log dumps.
- retention of riparian and other vegetation for at least 20 m from permanent streams, swampy ground, and bodies of standing water.
- retention of a filter strip of at least 5 m wide on either side of temporary streams and drainage lines.
- suspension of timber harvesting and log carting during periods of wet weather.
- the application of a general maximum slope limit of 30 degrees for harvesting operations.

The Code provides the basis for detailed harvesting prescriptions which take account of local conditions such as soil type, rainfall, and the type of harvesting operations. As a rule, the Code provides minimum standards which may be increased (in favour of increased environmental protection) through local prescriptions or through the judgement of CNR Forest Officers while developing Coupe Plans. Forest operations in the FMA are conducted in accordance with a set of local prescriptions that are no less stringent than the Code. Prescriptions for the FMA were reviewed in 1995 to take account of this Plan, new departmental boundaries and the review of the Code (see below). Implementation of these prescriptions is the principal mechanism for conserving stream and catchment values in State forest. Routine auditing of compliance with prescriptions and ongoing review of their efficacy is also important to ensure that requirements of the Code are met.

Some 'Potentially Threatening Processes' listed under the *Flora and Fauna Guarantee Act 1988* are addressed by the Code and associated prescriptions; in particular increased sedimentation of streams and the alteration of natural stream temperatures.

The Code is currently under review. A draft was released for public comment in October and the revised Code is expected to be finalised by March 1996.

ACTIONS:

Prescriptions for harvesting of native forest will continue to be applied in accordance with the standards established in the Code. They will continue to be upgraded as field experience, research or other information shows that change is warranted.

Compliance with the Code and local prescriptions will be assessed by routine audits conducted by CNR personnel from outside the East Gippsland FMA. The audit team will report to the Director, Forests Service, who will initiate any appropriate follow-up action.

The Riparian Environment

Stream related (riparian) environments are rich in aquatic and terrestrial flora and fauna, and valued for recreation and as places of beauty.

Natural Features and Heritage Rivers. The Land Conservation Council (LCC 1983a, 1983b, 1986) identified Natural Features Zones along a number of rivers and streams in the FMA, and recommended they be managed to conserve their natural and scenic values. More recently the Rivers and Streams Special Investigation (LCC 1991a), led to the inclusion of some of these streams on the schedule of the *Heritage Rivers Act 1992*. With the exception of a small stand of regrowth forest on the lower Snowy River (within which harvesting was permitted - LCC 1991a), all natural features zones and Heritage River corridors in State forest have been included in the SPZ.

Linear Reserves. A network of linear reserves (200 metres average width) linking larger parts of the SPZ and conservation reserves has been established as part of the fauna conservation strategy in this Plan (see Section 3.5).

Table 5. Stream protection in the Forest Management Area

Minimum Buffer Width (metres)	Stream
Heritage Rivers (as recommended by the Land Conservation Council, LCC (1991a))	
> 200	Snowy R. (boundaries as mapped)
200	Bemm R. (downstream of Princes Hwy.)
150	Bemm R. (upstream of Princes Hwy.), Goolengook R. (downstream of Arte R.)
100	Arte R., Goolengook R. (upstream of Arte R.)
Linear Reserves (designated for wildlife conservation)	
200	Brodrigg R. (from Brodrigg Flora reserve upstream to Sardine Ck.), Simpson Ck., Hartland R. (part), Hensleigh Ck. and tributaries, Cann R. (downstream of Cann River township), Little R. (in the Blue Gum Flat area)
150	Betka R., Brodrigg R. (from Sardine Ck. upstream to Big R. junction), Genoa R., Mueller R., Timbarra R. (downstream of Timbarra), Wallagaraugh R., Wingan R. (downstream of Wingan Swamp), Thurra R. (downstream of Thurra junction)
100	All other linear reserves. Average width should be 200 metres.
Code of Forest Practices for Timber Production	
20	All other permanent streams. In many cases buffers will be wider than 20 metres due to steep slopes, extra buffers for rainforest, and the practical constraint of not being permitted to fell trees into the buffer.
5	Temporary or ephemeral streams within logging coupes. Trees may be felled within these 'filter strips' and entry of machinery will only be permitted at approved stream crossings.

Note: Buffers will be applied to each side of the stream and increased to include the flood plain on some streams, especially on the Thurra and Wingan Rivers (see Map 26).

ACTIONS:

All streams and associated riparian vegetation in State forest have been included in the SPZ. Stream buffers are specified according to the size, status and significance of different streams (Table 5 and Map 26).

The forest road network will be designed to minimise the need for new major stream crossings. Where stream crossings are necessary, they will be constructed in accordance with the Code. Where the crossing of linear reserves is unavoidable, special attention will be paid to minimise road width and to retain canopy closure over the road wherever possible.

Soil erosion

Of the three main types of potential land degradation relevant to forested land (soil erosion, soil compaction and nutrient decline), soil erosion is the most significant. It can have undesirable on-site effects, such as the removal of nutrients and soil organisms important for plant growth, and off-site effects on water quality and stream values. Road construction and timber harvesting, if not managed properly, can cause unacceptably high erosion.

Increasing slope is directly related to increasing erosion hazard. Current prescriptions place a general slope limit of 30 degrees on timber harvesting. This can be varied with soil type and stability, intensity and magnitude of harvesting and the type of logging machinery used. Granite-based soils are more susceptible to erosion mainly due to their low clay content, which provides limited cohesion. In areas with these soils, 30 degree slopes are generally too steep for harvesting with current technology.

ACTIONS:

All logging coupes, new roads and upgrading of major roads will be included in the Wood Utilisation Plan (see Chapter 8). In areas with high erosion hazard (see Map 26) harvesting will only be permitted in accordance with specialist advice. Timber harvesting will be excluded from areas with extreme erosion hazard.

Field officers will be trained to recognise the characteristics of different soil types and their associated erosion hazards.

Harvesting prescriptions will be amended to place a general limitation on harvesting operations in areas with granite-based soils and slopes steeper than 25 degrees.

Water Supply Catchments

The FMA includes eight Special Water Supply Catchment Areas listed in the *Catchment and Land Protection Act 1994* (formerly these were called Proclaimed Water Supply Catchments under the now repealed *Soil Conservation and Land Utilisation Act 1958*). The Statement of Resources, Uses and Values for the FMA (Lugg *et al.* 1993) includes a list and map of these catchments. Ninety-five percent of their area is State forest. The *Code of Forest Practices for Timber Production* (Code) requires that water quality and yield are protected in water supply catchments.

Water yield. Most Special Water Supply Catchment Areas in the FMA are large, amply supplying the small towns and farms that draw on them. The Rocky and Betka River catchments, supplying Orbost and Mallacoota respectively, are exceptions being small for the population centres they service. The former Orbost and Mallacoota Water Boards (now encompassed by East Gippsland Water) have reported difficulties in maintaining supplies, especially during summer, when river flows are low and demand is high. It has sometimes been necessary to augment the main supply from other sources. Maintenance of water supply is therefore of paramount importance in these catchments.

While water supplies drawn from the Rocky River can be readily augmented from the nearby Brodribb River, such alternatives do not exist to supplement the Betka River. Some members of the Mallacoota community have expressed concern that vigorous regenerating forest resulting from fires and timber harvesting in the Betka River catchment may use more water than older forest, and consequently decrease summer flows in the Betka River. Such an effect is well documented for Mountain Ash forests near Melbourne (Kuczera 1985) but less well documented for drier forests. In recognition of the potential effect of regrowth forest on water yield the Code requires that '*appropriate rotation lengths, silvicultural techniques and limitations on the areas harvested annually*' are applied in water supply catchments.

There is little empirical data available on water yields in catchments with shallow soils. The possible effects of regrowth forests on water yield in the Betka River catchment are therefore speculative. However a recent study did find that apparent decreases in flows in the Betka River between 1982 and 1988 could not be attributed to timber harvesting because such an effect has not had time to manifest (Jayasuriyah and O'Shaughnessy 1994). These authors also noted that, based on catchment hydrology research elsewhere, at least 30% of a catchment needs to be subject to a change in land use to produce a significant impact on water yield. The area available for timber production in the Betka catchment is 3370 ha (approximately 29% of the catchment). It is therefore unlikely that timber harvesting alone would have a major impact on water yield. The possible combined effect of regrowth forest originating from both wildfires and timber harvesting however remains uncertain.

The marked effect of regrowth Mountain Ash forest on water yield is something of a special case and at least two factors would be likely to temper any comparable effect in the Betka River catchment. First, the Lowland Forest that predominates in the area is adapted to an extremely fire prone environment, and mature trees survive all but the most severe fire. For example, significant areas of forest in the catchment were burnt in the severe fires of 1983 and the canopy has recovered in most areas. This contrasts with Mountain Ash forest where fires can readily kill overstorey trees and lead to a dense regrowth forest. An overstorey of older trees significantly depresses the growth of young trees and therefore any effect they might have on water yield. Secondly, shallow soils have a lower capacity for storage of soil moisture than deep mountain soils. There is therefore less time for trees to utilise water passing through the system and less opportunity for different rates of water use (between young and old trees) to manifest (pers. comm. P. O' Shaughnessy, consulting hydrologist, Croydon, Victoria).

Problems with maintaining water supplies to Mallacoota are most likely a consequence of the small size of the catchment, and the area's highly variable climate that affects summer flows in the Betka River.

Water quality: Water quality is addressed by the general provisions of the Code and associated prescriptions (see Section 5.1). The Rocky River has the additional protection of a Special Area Plan (replaces the Land Use Determination established under the repealed *Soil Conservation and Land Utilisation Act 1958* See Table 6).

Water in the Betka River is naturally high in tannin and organic matter. Water drawn from the river for domestic use is currently chlorinated to ensure it is safe to drink. Unfortunately this produces an odour problem that contributes to general concern over Mallacoota's water supply. East Gippsland Water is currently examining the feasibility of a water treatment plant to eliminate the problem and provide a domestic water supply that meets World Health Organisation standards. This issue is unrelated to timber harvesting or other forest management activities.

There are no apparent water supply problems clearly associated with forest management activities in the FMA. CNR nonetheless acknowledges the importance of the Rocky and Betka River catchments for domestic water supply, the level of public concern over land use activities in these areas, and the need for ongoing consultation and monitoring.

ACTIONS:

Water quality in Special Water Supply Catchment Areas will continue to be protected by strict adherence to the Code and associated prescriptions.

The catchments of the Rocky and Betka Rivers will be placed in the Special Management Zone and the following constraints on forest management activities will apply:

- *No new road crossings will be built on major streams.*
- *All roads and tracks will be maintained in accordance with the Code and associated prescriptions. Some old roads and tracks may need to be closed and rehabilitated or upgraded to meet these standards.*
- *The maximum area to be harvested annually and the minimum size of stream buffers will be in accordance with Table 6.*

The Department will annually advise East Gippsland Water of the availability of Wood Utilisation Plans and the fuel-reduction burning program.

A consultative committee will be established to review planned activities in the Betka River Special Water Supply Catchment Area and provide advice to the Department. The Committee will include representatives of CNR, East Gippsland Water, the East Gippsland Catchment and Land Protection Board, and the local community. Plans will be modified if new information or research indicates that this is desirable.

Table 6. Characteristics and management of the Rocky River and Betka River Special Water Supply Catchment Areas

	Betka	Rocky
Total catchment area (hectares)	11 700	2 400
Area available for timber production (hectares, % of catchment area) ¹	3370 (29%)	1087 (45%)
Maximum area to be harvested annually (hectares, % of catchment area)	120 (1%)	40 (1.7%)
Buffer strip on main river (metres) ^{2,3}	150	100
Minimum buffer strip on major tributaries (metres) ²	20	40
Minimum buffer strip on all other permanent streams (metres) ²	20	30
Minimum buffer strip on water supply off-take weir	in National Park	100

Notes:

1. The areas estimated to be available for timber production are based on HARIS (1993) and local knowledge about factors such as accessibility and terrain.
2. Buffer strips specify the minimum width of vegetation retained between a logging coupe and an adjacent stream. They apply to both sides of a stream. The 20 m buffers specified here for the Betka are a minimum set down in regional prescriptions. This standard may change as a result of the current review of the Code of Forest Practices for Timber Production (CNR 1995b). The buffers on the main rivers are designated for wildlife conservation (see Section 3.5) and are much wider than strictly necessary for protection of water quality.
3. The Rocky River 'Special Area Plan' specifies buffers of 100m buffer on the off-take weir, 40 m on the river upstream of the weir, 40m on major tributaries, and 30 m on other water courses.

5.3 PEST PLANTS AND ANIMALS

Weed-dispersal mechanisms and pest animal territories cross land management boundaries. Control efforts on one parcel of land may be futile if infestations on adjoining land are left untreated. Effective pest control programs must therefore be co-ordinated across public and private land.

Eradication of well-established pest species is not usually feasible, due to resources being finite. Control programs should therefore focus on limiting the damage caused by pest species to specific values. East Gippsland is a large, mostly natural and nationally significant area. Preventing the introduction and spread of new pest species is a key priority.

Aims

- *Focus resources on improved protection of the biological, productive and aesthetic values on public land from damage by pests.*
- *Co-ordinate pest control operations across all public and private land.*
- *Prevent introduction of new pest species into the FMA, or their spread into sensitive areas.*

Priority areas for pest control

The Department has a 'good neighbour' policy to facilitate pest control on public land complementing control measures on private land for protection of values such as pasture and livestock. On public land the priority will be to protect significant natural and productive values.

ACTIONS:

Public land pest-management working groups will evaluate threats and determine specific control priorities on public land. The priority areas for pest control in State forest will be as follows:

- *sites with high conservation values, including the SPZ, rainforest, and endangered-species localities.*
- *high-use areas such as visitor facilities and logging coupes.*
- *major roads and tracks.*

Weeds

The forests of East Gippsland are in a relatively natural condition and, with the exception of Blackberries on watercourses, tracks and private land boundaries, do not carry a heavy weed burden. Environmental weeds, however, have enormous and often overlooked potential to affect native forest. While some environmental weeds can invade undisturbed forest, disturbance from timber harvesting and road construction provides opportunities for others, such as Ragwort, to establish where they would otherwise have little chance of either introduction or establishment. To prevent this, we need to raise awareness of environmental weeds, implement practical measures to reduce the risk of weed spread, and routinely record weed infestations.

ACTIONS:

A weed hygiene policy will be developed, aimed at reducing the risk of introducing new weed species to the FMA, and at controlling the spread of weeds from existing infestations.

Isolated infestations of highly invasive environmental weeds will be given a high priority for eradication. Table 7 lists some of the most serious weeds in this category that occur, or are likely to occur, in State forest.

Infestations of high-threat weeds that are too extensive to eradicate and large infestations of less-invasive weeds threatening important values will be contained and their extent gradually reduced.

Noxious weeds will be controlled in State forest in accordance with the Catchment and Land Protection Act 1994. Five-year control programs will be developed and control efforts coordinated on a catchment basis.

Table 7. Invasive environmental weeds with high priority for control in State forest

Scientific name	Common name	Scientific name	Common name
<i>Cortaderia selloana</i>	Pampas Grass	<i>Myrsiphyllum asparagoides</i>	Bridal Creeper (Smilax)
<i>Cytisus scoparius</i>	English Broom	<i>Nassella trichotoma</i>	Serrated Tussock
<i>Delairea odorata</i>	Cape Ivy	<i>Pennisetum clandestinum</i>	Kikuyu
<i>Dipogon lignosus</i>	Dolichos Pea	<i>Pinus radiata</i>	Monterey Pine
<i>Eragrostis curvula</i>	African Lovegrass	<i>Senecio jacobea</i>	Ragwort
<i>Genista monspessulana</i>	Cape Broom	<i>Salix spp.</i>	Willows
<i>Hedera helix</i>	English Ivy	<i>Tradescantia albiflora</i>	Wandering Jew
<i>Homeria flaccida</i>	One-leaf Cape Tulip	<i>Vinca major</i>	Blue Periwinkle
<i>Hypericum perforatum</i>	St Johns Wort		

Pest animals

Foxes, cats and wild dogs are widespread, well established and presumed to occupy most of the ecological niches available for them. They prey on native fauna, and foxes in particular are considered to pose a threat to endangered or vulnerable species such as Long-footed Potoroos. They may also compete with the Spot-tail Quoll and other native predators. Foxes and dogs are hosts for hydatid tapeworms and a potential reservoir for the Rabies virus. Eradication of these species is not feasible and control efforts will be directed towards protection of endangered fauna populations and supporting the efforts of land holders to protect livestock.

Feral pigs pose a threat to the health of humans and livestock by carrying diseases including tuberculosis and brucellosis, and, in the event of an outbreak of exotic diseases such as foot and mouth, Swine Fever and Bluetongue, would provide a wild reservoir. They can also cause soil erosion through their rooting and wallowing behaviour. A large number of feral pigs occur in forest at Nungatta, N.S.W., where approximately 1000 pigs have been trapped between 1986 and 1994. Sightings in the FMA are becoming more common. The migratory nature of feral pigs makes individuals or small family groups difficult to locate and control. Once located, pigs may be shot, snared, trapped or poisoned.

Feral goats can significantly reduce the integrity of vegetation communities and spread livestock diseases. Small numbers are reported to occur in Coopracambra National Park and in the Mount Delegate area.

Rabbits occur throughout the FMA in generally low numbers. Control is primarily achieved through field strains of Myxomatosis. Additional control is only warranted where significant infestations affect adjoining freehold land.

Occasionally, native fauna threaten certain productive values (for example, sometimes kangaroos and cockatoos graze crops, wombats damage fences and wallabies browse regenerating logging coupes). These problems can often be avoided by techniques such as use of well-designed and maintained electric fences and close adherence to regeneration techniques. However, in some cases, control measures are necessary.

ACTIONS:

A predator control program will be developed that targets threatened species' habitat. It will cover all relevant land categories and be integrated with control programs for protection of private land values. In State forest, priority will be given to protecting Long-footed Potoroos at Bellbird and in Sardine and Ellery Forest Management Blocks. Control programs will be conducted using the buried-bait technique and free feeding where necessary, to minimise the impact on non-target species.

As part of its 'good neighbour' policy, the Department will continue to support coordinated predator control programs to protect livestock.

Pig populations will be monitored and control action taken when infestations are located.

Feral goat populations will be eradicated where feasible.

Rabbit populations will be monitored and appropriate control action taken in line with the 'good neighbour' policy.

Where non-destructive methods have failed, problem native species will be controlled in strict accordance with Departmental policies and guidelines.

Chapter 6

CULTURAL VALUES

6.1 RECREATION AND TOURISM

The coast, mountains and extensive forest of East Gippsland, together with its mild climate, provide a setting with great potential for nature-based recreation, education and tourism.

Recreation and tourism in the FMA centre on the coast and the region's magnificent national parks. These include the most diverse, spectacular and remote parts of the FMA and provide some of the best opportunities for camping, walking, fishing and wilderness experiences. CNR will manage State forest to complement national parks, providing a diverse range of recreation experiences and tourism opportunities across East Gippsland.

Aims

- *Provide for a wide range of nature-based activities in State forest.*
- *Manage State forest to support and complement recreation and tourism opportunities in national parks.*
- *Educate and inform visitors about native forests and their management.*
- *Establish East Gippsland as an ecotourism destination.*

Integrated planning

The Far East Gippsland Tourism Strategy (Government of Victoria 1988), the Recreation Opportunity Spectrum (see Lugg *et al.* 1993) and local expertise, all show that the role of State forest in East Gippsland, in relation to recreation and tourism, should be to provide for:

- vehicle-based touring, including access to national parks and self-guided forest drives;
- interpretation and education about native forest management and cultural features in State forest;
- camping, where it provides a suitable base for visitors to explore inland parts of the FMA, and as a back-up for national parks in peak visitor periods;
- day-use areas close to population centres and the Princes Highway; and
- activities that are restricted in national parks, such as four-wheel-drive touring, horse-riding and hunting.

To this end, initiatives in recent years have included publication of an East Gippsland touring guide, establishment of the Murrungowar Forest Drive, Baldwin-Spencer Trail and rainforest walks at McKenzie and Thurra Rivers. These were supported by interpretive brochures and picnic facilities, and by camp-sites providing a base for further exploration. Implementation of the scenic drive network and other actions in this Plan will build on these initiatives. Systematic visitor-monitoring and a coordinated approach to recreation and tourism on all public land will determine whether these strategies are working, and identify future management requirements.

The term 'ecotourism' refers to tourism activities centred on the environment, conducted sensitively and including an educative element. The Draft National Ecotourism Strategy (Commonwealth of Australia 1994) emphasises the need for integrated regional planning to ensure that ecotourism is complementary to and compatible with natural resource management. This Plan therefore provides a

suitable framework for ecotourism in State forest. Ecotourism planning should cover all public land, and should involve local government, the tourism industry and other interested groups. Community groups, existing tour operators, the timber industry, craft workers and others have expressed interest in ecotourism development in East Gippsland.

ACTIONS:

Recreation in State forest will be planned to complement the recreation opportunities provided by parks. Visitor monitoring programs will be developed to assess visitor use and facilitate future planning. Traffic counters will be installed on key scenic drives, and visitor surveys conducted during peak visitor periods.

An ecotourism strategy for far East Gippsland will be completed in 1996. It will provide strategic direction for ecotourism development on public land. In relation to State forest, the strategy will incorporate:

- *the scenic drive-network and recreation facilities identified in this Plan; and*
- *a network of walking tracks (in State forest these will generally follow existing minor roads and vehicle tracks, making use of the Special Protection Zone where appropriate).*

Recreation in State forest

East Gippsland is large, a considerable distance from major population centres and, except for coastal areas, relatively unconstrained by entrenched user patterns and high visitor numbers. It has room to accommodate a wide range of recreation activities with a minimal potential for conflict.

Vehicle-based touring and associated facilities and interpretation will be the major focus for recreation planning in State forest. An important issue on forest drives will be the risk of dangerous encounters between visitor traffic and log trucks. It is also important to manage the landscape on tourist drives sensitively and to provide opportunities for visitors to learn about timber production in a planned and constructive manner.

ACTIONS:

Scenic drives

A network of Scenic Drives along the existing road system, including key national park access roads, self-guided forest drives and major thoroughfares (see Map 26) will provide a focus for:

- *protection of landscape values (see section 6.2).*
- *provision of good-quality signs.*
- *development of interpretive signs and brochures.*
- *development and maintenance of recreation facilities.*

Scenic drives will differ in their character, level of use and management input. Appendix O lists roads in the scenic-drive network and some of their key attributes.

Murrungowar Forest Drive will be improved to an all-weather standard and interpretation facilities provided.

Self-guided forest drives around Buchan (Dawson Road, Basin Road, Tulloch Ard Road, Gelantipy Road) and Mallacoota (Betka Track, Stony Peak Road, Princess Highway, Mallacoota Road) will be investigated.

Warning signs will be erected on scenic drives frequented by log trucks. Each year the Senior Forester, in consultation with the timber and tourism industries, will identify scenic drives where log-truck traffic will be restricted during peak visitor periods.

Forest tours

CNR will conduct guided tours of forested areas for summer visitors to East Gippsland. The aim of the tours will be to raise public awareness of East Gippsland's forests and forest management.

Visitor facilities

Facilities in State forest will be managed to complement the scenic-drive network and facilities in national parks (Table 8). Priorities for visitor facilities across the whole FMA will be reviewed as part of the ecotourism strategy.

Recreation activities

Management of State forest for recreation will complement national park management by catering for activities such as deer-hunting, four-wheel-drive touring and horse-riding that either are not permitted or are restricted in national parks. Dispersed camping will also be permitted. Standard conditions relating to vehicle registration, fire restrictions and permits for the use of firearms, hunting of game, and fishing of inland waters will apply. Roads will be closed as necessary to prevent road deterioration (eg. during wet weather), and for public safety.

The Department will continue to liaise with the Victoria Association of Four-wheel-drive Clubs over access to public land and use of vehicular tracks. In 1996 a booklet will be published on touring opportunities in East Gippsland

Self regulation through 'codes of conduct' such as the Mountain Bike Code and the Horse-riding Code, or the 'Tread Lightly' campaign, will be encouraged.

Table 8. Management of visitor facilities in, or immediately adjacent to, State forest

LOCALITY	ACTION
Wayside stops on major thoroughfares	
Drummer Road	Maintain rainforest walk and picnic area
Murrungowar and Newmerella log-checking stations	Maintain picnic area
Bright Light Saddle	Close and rehabilitate
Martins Creek, Bonang Road	Close and rehabilitate
Day trips from Orbost and Cape Conran	
Mount Buck	Maintain as picnic and scenic viewing area
Young's Creek Falls ^{1,2}	Upgrade walking track, picnic facilities and signs
Little Cabbage Tree Falls ²	Develop picnic area and incorporate in Murrungowar forest drive
St Patrick's Falls ²	Develop picnic area and incorporate in Murrungowar forest drive
Day trips from Nowa Nowa and Buchan	
Ash Saddle	Develop picnic area and interpretation shelter as part of proposed Buchan—Tulloch Ard forest drive
Cosstick's Weir ¹	Maintain picnic area as part of Colquhoun forest drive
Mundic Creek	Maintain picnic area as part of Colquhoun forest drive
Stony Creek trestle bridge ¹	Upgrade interpretation as part of Colquhoun forest drive
Stringer's Knob fire tower ¹	Maintain picnic facilities as a side trip from Orbost—Buchan scenic drive
Day trip from Bendoc—Bonang area	
Delegate River Tunnel ¹	Maintain
Camp-sites	
Goongerah, Ada River, Delegate River, Timbarra Camp zone	Maintain as a base for exploration of inland forest areas and national parks
Peach Tree Creek	Maintain to support facilities in Croajingolong National Park; introduce a booking system
Wood's Point	Maintain
Little Cabbage Tree Falls ²	Investigate provision of camping facilities

Note: Historical (1) and aesthetic (2) values are those identified during the recent joint assessment of national estate values (AHC & CNR, in prep.).

6.2 LANDSCAPE MANAGEMENT

The scenery of East Gippsland ranges from its wild coastline to lush rainforest, rocky gorges, mountain peaks and unbroken forest vistas. The dominant feature of the landscape is forest, which covers 80% of the FMA and extends from Bass Strait to the alps. Lugg *et al.* (1993) provide more background information on landscape values in the FMA.

Visitors to the area bring expectations of naturalness, and what they see strongly influences their perceptions of East Gippsland and of native forest management. Some activities in State forest, particularly timber harvesting and road construction, can have a detrimental effect on the landscape and, therefore, on visitor impressions. Timber production is nonetheless the mainstay of the local economy and an important part of forest management in the region. Harvested areas of forest and regrowth stands may therefore be part of the experience of visitors to State forest, but should not dominate their impressions. Judicious use of screening vegetation, together with carefully planned logging coupes and interpretive signs on major tourist drives, should prevent negative impressions about timber harvesting and improve understanding of forest management.

Aims

- *Protect landscape values, especially in areas of greatest scenic quality and viewer interest.*
- *Provide visitors with opportunities to view a range of forest management activities.*

General Strategy

Landscape management on public land is guided by the Department's Visual Management System or VMS (Williamson and Calder 1979). This uses a combination of scenic quality, visitor sensitivity and distance classes to set 'visual quality objectives' for an area. The VMS can be used for detailed landscape planning or to develop broader landscape management strategies. In preparing this Plan, the VMS was used to help identify the key areas in State forest where detailed planning will be required to protect landscape values.

The most important areas for landscape management are those seen from major tourist roads, national park access roads, popular scenic drives and key lookouts with views into State forest. The level of visitor sensitivity and therefore the required management input in these areas varies according to the quality of the landscape, the number of visitors to an area and their likely expectations.

ACTIONS:

The priority areas for landscape management will be State forest seen from the scenic-drive network and key lookouts (both illustrated on Map 26 and listed in Appendix O). Maps highlighting State forest visible from scenic drives and lookouts will be maintained at district CNR offices. These 'seen areas' will be managed to maintain a high-quality and diverse landscape.

During annual development of the Wood Utilisation Plan proposed coupes and road alignments within the seen area will be highlighted for consideration of their possible impact on landscape values. Provisions for landscape management will subsequently be included on individual coupe, road or site plans.

Other developments such as clearing of easements will be planned in a similar fashion.

LANDSCAPE MANAGEMENT GUIDELINES

The 'seen area' from scenic drives and designated lookouts can be sub-divided into the foreground, middle-ground and background. These guidelines indicate acceptable levels of landscape alteration within these categories.

The extent to which these guidelines apply will vary according to how much a road or lookout is used by visitors and the expectations they are likely to have. For example greater attention to landscape management will be required on thoroughfares such as the Princes Highway, Cann Valley Highway and Bonang Rd than on a forest road like Greens Rd. Appendix O lists some specific landscape features to be protected on each scenic drive.

Foreground (immediate environs of the road or lookout, including views up to 500 m distant)

- Most landscape alterations should be temporary, subtle and not evident to the casual observer.
- Logging coupes, new road alignments or easements should generally be screened from view. Retention of buffering vegetation between roads and logging coupes will be the main method of screening. The width of buffers will vary according to local variations in topography and vegetation type, although 20 m should be a minimum. Selective logging may occur in the buffer, provided an effective screen is maintained
- Harvesting to the roadside and small-scale patch felling will be permitted at selected sites on scenic drives. This would be appropriate where the coupe is on an interpretive forest drive, or on the less-sensitive parts of scenic drives. Explanatory signs will be provided in such areas.
- Regrowth thinning will be permitted adjacent to scenic drives and explanatory signs will be provided.

Middle ground (views from lookouts and vantage points on roads up to approximately 6.5 km distant)

- Landscape alterations may be evident in the short term, but should only be subtly apparent within two years of the alteration.
- Logging coupes, new roads and easements in these areas should be shaped, positioned and timed to minimise their visual impact.

Prominent background ridge lines

- Logging coupes, new roads and easements should be designed so that clearfelling and 'notches' on the skyline are not apparent. This will involve attention to the angle at which roads or cleared easements cross prominent ridge lines, or to the design and timing of logging coupes.

Buchan area

Buchan is a well-recognised tourist destination in East Gippsland. The Buchan Caves are a major attraction and the town is a gateway to the Victorian alps and the Snowy River National Park. At W-Tree, to the north of Buchan, some small tourism businesses depend on their natural setting to attract visitors and provide them with a memorable experience. W-Tree is set amid State forest available for timber production, the other important aspect of the local economy. The visual effects of timber

harvesting in this area have caused concern amongst some tourism operators and members of the local community. Careful management is needed to minimise the visual effects of timber harvesting so that the area's natural appeal and tourism potential are maintained.

ACTION:

In conjunction with other values (like old-growth forest and threatened species habitat), areas with very high landscape values and opportunities for tourism will be protected in the SPZ. Accordingly a major part of the Dawson Range (Site no 812/01), and a corridor linking Dawson Range to Snowy River National Park (Sites 810/06, 810/08, 813/01, 813/07) have been placed in the SPZ (see Map 24).

The Department will continue to minimise the visual effects of timber harvesting in the W-Tree area in line with the Landscape Management Guidelines set out above. Three areas of particular sensitivity have been placed in the Special Management Zone. These are Wattle Gully (Site no. 812/09), W-Tree Creek headwaters (Site no. 813/06) and Black Satin Creek (Site no. 810/07). Coupes in these areas which are highly visible from the Gelantipy Road will be limited to approximately 20 hectares in size and at least three years will be left between harvesting of adjacent coupes. Coupes that are not visible from the Gelantipy Road will be harvested in accordance with standard practices. Map 24 details the zoning system in this area.

Aesthetic values (national estate)

As part of the recent assessment of national estate values in East Gippsland, areas with high aesthetic qualities were systematically identified (AHC and CNR, in prep.). Sensitive management of those areas in State forest will be an integral part of landscape management and development of ecotourism opportunities.

ACTIONS:

State forest with aesthetic qualities of national estate significance will be conserved by maintaining the elements and character of the landscape and by providing visitor facilities to enable their sensitive use and appreciation. Table 9 lists these areas and how they will be managed.

Table 9. Management of aesthetic values of national estate significance in State forest

Locality	Management
Buchan-Orbost Road	Included in Scenic Drive Network (Appendix O)
Waterfalls on Young's Creek, Little Cabbage Tree Creek, and St. Patrick's River	Will be managed for recreation and scenic qualities; facilities will be developed as listed in Table 9.
Dawson Range	Most of this area has been included in the SPZ due to its numerous values (Site no. 812/01). Some has been included in the SMZ (Site no. 812/09) on account of landscape values. The balance of the area is covered by the general landscape strategy
Genoa Gorge	Included in the SPZ (Site no. 877/04)
W-Tree Creek Catchment	Included in the SMZ (Site no. 813/06) on account of landscape values
Mt. Tanglefoot, Mt. Bemm, and Maramingo Hill	Covered by the general landscape strategy

6.3 HISTORICAL AND ABORIGINAL PLACES

East Gippsland's forests form part of human history, as well as part of nature. Natural processes such as fire and vegetation growth have concealed or destroyed most material evidence of this history. Traces of Aboriginal occupation and use of the land, and sites with evidence of European settlement, pastoralism, mining and timber-getting, are therefore valuable reminders of a rich human past. Places of traditional significance for Aboriginal people must also be respected and protected in collaboration with the traditional owners.

While most areas known to be significant historical or aboriginal places are centred on national parks and private land, important areas also occur in State forest.

Aims

- *Protect significant cultural values from potentially damaging human activity.*
- *Integrate the management of cultural heritage with natural resource management.*
- *Foster the sensitive use of historical places and areas with high aesthetic quality for the education and enjoyment of the public.*

Aboriginal places

These include areas of traditional significance to local Aboriginal communities and sites with material evidence of Aboriginal occupation and use. Evidence of Aboriginal occupation and use of natural resources in the FMA is widespread. About 1500 sites are known, including coastal shell middens, surface artefact scatters and, more rarely, sites with rock art or axe-grinding grooves. Most of these areas, including all those qualifying under national estate criteria, are in national parks or other reserves, especially along the coast. Important places do occur in State forest, however, and are potentially threatened by timber harvesting, road construction or other activities. Close consultation with local Aboriginal communities and Aboriginal Affairs Victoria (AAV) is essential to ensure that Aboriginal sites are protected, while maintaining their confidentiality. Some sites only become evident when the vegetation or soil surface is disturbed.

Aboriginal sites are a valuable cultural, scientific and educational resource. The respective Aboriginal communities are the traditional custodians of Aboriginal sites and AAV is the State government authority responsible for administering the *Victorian Archaeological and Aboriginal Relics Preservation Act 1972* and sections of the *Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. The Heritage Services Branch of AAV identifies, researches, assesses and manages the State's pre- and post-contact Aboriginal sites and maintains a register of them.

ACTIONS:

The AAV and local Aboriginal communities will be annually notified of the availability of Wood Utilisation Plans. Relevant details will be supplied to facilitate opportunistic archaeological surveys if required.

The location of archaeological sites will be treated as confidential and only released to the public with the approval of AAV and the relevant Aboriginal community. Critically significant archaeological sites will be included in the Special Protection Zone.

The Department will continue to consult with local Aboriginal communities and seek opportunities to involve them in management of public land.

Historical places

As part of the joint AHC/CNR assessment of national estate values in East Gippsland, Brady and Perham (1993) and Grinsbergs (1993) provide comprehensive documentation of historical places. While most are in national parks, historic reserves, or on private land, a number of significant areas in State forest require special management. These include specific sites such as huts and mines, and travelling routes such as those followed by explorers. The major emphasis of management will be to protect significant historical sites from human disturbance, wildfire and inappropriate development. Selected areas will be featured in recreation and interpretation programs.

ACTIONS:

Historical places in State forest will be managed in accordance with the principles of the Burra Charter (International Council on Monuments and Sites). The most significant will be included in the SPZ or SMZ, to highlight their importance and ensure that protection is provided when activities in their vicinity are planned. Priority will be given to the protection and management of historical sites on the Register of the National Estate.

The annual Wood Utilisation Plans (see Chapter 8), will ensure that proposed activities (like road construction, timber harvesting, fuel-reduction burning or development of recreation facilities) do not adversely affect historical sites.

The level of fire protection provided to the historical sites listed in Table 10 will be reviewed in 1995 as part of the review of the Fire Protection Plan covering the FMA.

Routes of human movement with national estate values and following existing roads will be included in the scenic-drive network. These provide a focus for protection of aesthetic values and interpretation (see earlier in this chapter and Appendix O).

As part of the ecotourism strategy for public land in the FMA, historical sites will be featured in self-guided forest drives and be the focus of recreation facilities where appropriate (see above).

Table 10. Historical places in State forest with national estate values²

Site No. ¹	Feature
801/02	Cosstick's Weir and trestle bridges on the Orbost—Bairnsdale railway line
801/08	Colquhoun railway siding (Orbost—Bairnsdale railway line)
807/02	Mt Tara fire tower, World War II sites and gold-mining areas
807/03	Monarch mine, Tara Range
827/07	Young's Creek weir (former Orbost Water Supply)
830/05	Timber-workers' huts, Glen Arte (two weatherboard huts)
832/02	Close family allotment, Murrungowar
890/07	Hungerford's farm
832/06	17 mile tree, Murrungowar (polling place for Murrungowar community in 1905)
892/07	Clarkeville gold-mining settlement
892/10	Wilson's Hut (slab hut construction)
893/05	Croesus Mine (Bonang goldfields)
895/02	Dartmoor Hut
895/05	Delegate River Tunnel (built by Chinese workers in the 1860s)
902/02	Border cairn (Black—Allen Line)
Routes of human movement	
	Orbost—Bairnsdale railway line
	Lake Tyers House Rd (old coach route to Lake Tyers House)
	Buchan—Jindabyne Rd (built with Great Depression labour)
	Walter Baldwin-Spencer's journey (route closely followed by roads; see Appendix O).

Sources: Brady and Perham (1994), Grinsbergs (1993) and Lugg *et al.* (1993). Notes: (1) See Map 26 and Appendix B; (2) These were identified as part of the joint project to identify national estate values (AHC/CNR, in prep.).

6.4 NATIONAL ESTATE

The Australian Heritage Commission (AHC) and the Department of Conservation and Natural Resources have been jointly assessing the national estate values in East Gippsland. The aims of the project are to:

- identify areas in East Gippsland that merit listing on the Register of the National Estate;
- assess the representation of national estate values in conservation reserves; and
- provide advice on the maintenance of national estate values.

The project has identified 90 broad areas of national estate significance on public land and covering some 54% of State forest. These range from a World War II intelligence-gathering complex to historic mining sites, natural landscapes and places which the community values for recreation.

A set of conservation principles for national estate values has been drafted. For the Department, these will be applied through its management plans and for the AHC, they will be accounted for in its development of conservation advice. The principles affirm the following statements.

- Integrated regional management is the basis for effective conservation of national estate values.

- Protection decisions should be based on the extensiveness of each value within the region, taking into account: its abundance; spatial and temporal distribution; spatial characteristics; variation and condition. Protection decisions should not be based on individual expressions of the value in isolation.
- For sensitive national estate values, the highest level of protection is obtained through reservation appropriate to the value.
- Protection should consider the sensitivity of each national estate value to various types of disturbance, with sensitive natural values having adequate representation in nature conservation reserves.
- Management in all land tenures should address national estate values and make provision for their maintenance in management plans.
- Protection of natural environment values is achieved not only by the nature conservation reserve system and other legislated protection mechanisms, but also within State forests through forest management plans and by active management.
- The uneven integration of cultural sites in forest and park management plans highlights the need for a more coordinated approach to these values. Both partners believe a regional approach to the management of cultural heritage places is essential for their efficient and effective management and interpretation.
- Training of the relevant agency field staff in the protection of cultural values is needed.
- Active consultation with and participation by Aboriginal communities is necessary to obtain full information and cooperation in planning and managing for the conservation of sites with Aboriginal values.
- It is productive, effective and necessary to work with the community to identify and manage heritage.
- The principles of the *Australia ICOMOS Charter on the Conservation of Places of Cultural Significance* (Burra Charter) and its guidelines provide framework for the protection of cultural heritage sites and places.

The National Forest Policy Statement (NFPS) requires that a comprehensive, adequate and representative network of conservation reserves be established in forest areas. The assessment of values identified in the joint project and analysis of the level of protection of these values provide a strong basis for fulfilling the requirements of the NFPS. This Plan takes the next step by incorporating values identified by the joint project as part of a comprehensive and representative protected area network.

Management of areas with national estate values are encompassed by the strategies for biodiversity conservation (Chapter 3) and cultural values (this chapter), the emphasis being on managing the values on which national estate areas are based rather than the areas themselves. This section provides an overview of how each type of national estate value will be managed in accordance with those strategies.

Aim

- *Manage national estate values in State forest to ensure they are adequately conserved across public land in the Forest Management Area.*

A number of national estate values identified by the project were confined to conservation reserves or private land and are therefore outside the scope of the present Plan. These are: Aboriginal archaeological sites, various wetland categories, relictual fauna species, research sites and benchmark sites. National estate values in State forest have been grouped into five categories: cultural, geological, modelled, extensive natural and site-specific values.

Cultural values

While most cultural values identified by the project are in conservation reserves or on private land, some historic post-European settlement sites, routes of human movement and aesthetic values fall within State forest. Section 6.3 discusses these areas and describes how they will be managed.

Geological values

Geological and landform sites meeting national estate criteria correspond closely to the geological and geomorphological sites of significance identified by McRae-Williams *et al.* (1981). Most occur in conservation reserves or on private property, or are not sensitive to the types of disturbance that occur in State forest.

Modelled values (flora and fauna species richness)

By combining the Ecological Vegetation Class (EVC) mapping provided by Woodgate *et al.* (1994) with the extensive flora and fauna data-bases covering the FMA, the project identified areas with potentially high species richness. The process involved developing lists of characteristic flora and fauna species associated with each EVC. The final product was a set of maps showing grid squares (2 x 2 km) predicted to support a high number of species, based on the mosaic of EVCs within them.

The areas predicted to be species-rich usually included EVCs comprising forest of high biomass, such as Riparian Forest, Warm Temperate Rainforest or Damp Forest, juxtaposed with EVCs such as heathlands or Banksia Woodland on poorer-quality sites. Extensive mosaics of this kind occur in the Croajingolong National Park and the Sydenham Inlet—Cape Conran Coastal Park. Significant areas are also found in State forest south of the Princes Highway between Orbost and Mallacoota.

The best examples of the potentially species rich areas warrant formal recognition. To this end a number of areas have been placed in the SPZ, particularly east of Cann River where predicted species richness was highest, where the selected areas strengthen links between Croajingolong, Alfred and Coopracambra National Parks and where they also help meet the requirements of the heathland conservation guideline (see section 3.2 and Appendix L).

Extensive natural values

Table 11 indicates the degree of representation in reserves and zones of the more extensive national estate values in the Forest Management Area.

Table 11. Representation of extensive national estate values in conservation reserves and management zones

National estate value	Total area '000 ha	Conservation reserves (%)	SPZ (%)	SM Z (%)	GMZ (timber) (%)	GMZ (other uses) (%)
Wilderness	177	92	2	1	4	1
Endemic flora	192	54	16	4	21	4
Biogeographic range of flora	116	91	3	<1	1	<1
Refuge dependent EVCs	157	76	8	1	8	5
Places important for succession	186	62	12	2	14	10
Old-growth forest	177	63	12	2	10	13
Fauna refugia	82	41	36	2	16	3
Natural landscapes	361	70	9	1	11	9
Ecological Vegetation Classes	544	61	13	2	13	9

Source: GIS 1995.

Note: The balance to make up 100% for each value is located on private land.

Wilderness

A special investigation into wilderness in Victoria was conducted by the Land Conservation Council (LCC 1991b). The study identified 134, 500 ha of wilderness and 37, 400 ha of 'Remote and Natural Areas' in East Gippsland. The final recommendations of the study were adopted by the Victorian Government and scheduled under the *National Parks (Wilderness) Act 1992*.

The joint study of national estate values also identified areas of high wilderness quality using essentially the same data and method but slightly different criteria. Thus areas with a national wilderness index greater than 12, and an area greater than 8000 ha were considered to be "wilderness". The areas set aside for their wilderness value were chosen on the basis of their catchment integrity and the size. Ninety-two percent of the wilderness area identified in East Gippsland is in conservation reserves. This is accepted to be an adequate degree of protection.

Endemic flora

Areas in this category were derived from the known distribution of endemic species in the FMA and the EVCs in which they are most likely to occur. The largest, most contiguous ones are in national parks. Substantial tracts also occur in State forest (between the Mueller and Betka Rivers, between the Thurra and Genoa Rivers, Nunniong Plateau, Errinundra Plateau and its escarpment and the Cabbage Tree—Yeerung region).

Many endemic species are protected by the nature of their habitat (rocky outcrops and gorges) or by management prescriptions for the EVCs in which they occur (riparian vegetation, rainforest and heathlands). Some tracts of Lowland Forest, Damp Forest, Shrubby Dry Forest and Tableland Forest types are important for timber production as well as endemic flora conservation. Representative examples of these EVCs have been placed in the SPZ (see Appendix D).

Biogeographical range of flora

The project identified broad areas that contain populations of plant species either at the edge of their natural range or geographically isolated (disjunct) from their main distribution. The EVCs important for conservation of these species were also identified. While most of the land in this category occurs in conservation reserves, two significant areas occur in State forest: Mount Buck to the north of Orbost and the Binns forest management block in the far eastern corner of the FMA.

The sensitivity of disjunct populations and species at the edge of their range varies between species and from place to place. A conservative approach to management is warranted because these species often grow under marginal conditions and may therefore be vulnerable to disturbance. They may also be genetically distinct and warrant special protection for this reason. While Mount Buck has a history of disturbance, the Binns block remains in a more natural condition. In both cases substantial examples of the EVCs that include the significant flora populations have been placed in the SPZ or SMZ (Site numbers 827/04, 827/01, 848/01).

Refuge-dependent Ecological Vegetation Classes

Areas in this category are those associated with vegetation from the last Ice Age and those that occur in natural fire refuges. Most large, contiguous areas in this category are in conservation reserves, but smaller examples are scattered through State forest.

Their value derives from topographic and climatic factors that are not themselves affected by forest management activities. Refuge-dependent EVCs that are sensitive (such as rainforest) will receive a high level of protection in State forest (see Appendix D). Some of the more robust, eucalypt-dominated EVCs (like Wet Forest) in this category are also important for timber production. Good-quality, representative examples of these are conserved across their natural geographic range in conservation reserves, complemented by the SPZ in State forest (see Appendix E).

Places important for succession

These broad areas carry EVCs that are clear representatives of primary successional pathways and have had minimal interference from European settlement. Examples include the sequences of EVCs that develop on coastal sands, in riparian corridors and in sheltered, fire-protected areas where rainforest can develop.

Most of the EVCs comprising this category will receive a high level of protection in the FMA (see Appendix D). While the best and largest examples are in national parks, substantial areas are found in State forest, particularly in the headwaters of the Cann and Thurra Rivers, the Rich River and Martins Creek area and the Dawson Range. These mostly consist of Damp and Wet Forest with small areas of Warm Temperate Rainforest. Damp and Wet Forest are important for timber production.

While natural successional processes continue to operate in forest managed for timber production, it is nonetheless important to protect representative areas where these processes are uninterrupted by human activities. Appendix L lists the places important for succession included in SPZ.

Old-growth forest

Woodgate *et al.* (1994) described and mapped old-growth forest in the FMA, of which some 79% (about 177 000 ha) was subsequently identified as having national estate values. Appendix L indicates the contribution that the SPZ makes to protection of both national estate and old-growth values.

Conservation reserves already protect 63% of old-growth forest with national estate values and an additional 10% is in the SPZ. A further 14% is on other land unsuitable for timber production. Some old-growth forest in the more widespread and common EVCs such as Damp and Wet Forest is important for timber production. In accordance with the NFPS, a strategy has been developed to ensure comprehensive and adequate representation of old-growth forest (see earlier in this chapter).

Fauna refugia

These include wetlands, Riparian Forest, Riparian Shrubland, Riparian Scrub Complex, Cool Temperate Rainforest, Warm Temperate Rainforest and old-growth Wet Forest.

Riparian vegetation classes and rainforests are protected extensively in the SPZ (see Appendix D) and substantial areas of old-growth Wet Forest are protected through the implementation of the old-growth forest strategy (Appendix I). Wetlands identified as refugia are all in conservation reserves or on private land.

Natural landscapes

These are large areas of native vegetation considered to be relatively unaffected by human activity. The best and largest examples are protected in national parks. Natural landscapes are also considered as part of the old-growth forest conservation strategy (see earlier) and additional areas have been placed in the SPZ where they coincide with other values (see Appendix L).

Ecological Vegetation Classes

Of the public land in East Gippsland, 50% was identified as supporting good-quality examples of EVCs that were considered 'representative of their class', and therefore meeting national estate criteria. While a high proportion of the land identified under this category is within conservation reserves, substantial amounts also occur in State forest. These values are covered by the strategy for representative conservation of EVCs (see Appendix D).

Site-specific values

Nationally rare and uncommon EVCs and remnant vegetation

Ecological Vegetation Classes in these categories have been depleted across Australia by agricultural clearing, stock grazing, urban development and similar activities. Some, such as Limestone Box Forest, Riparian Forest and Herb-rich Forest, have been further degraded by selective logging and grazing. Most such activities have either ceased or are now better controlled in the FMA. Given their limited extent and high conservation significance, high proportions of these EVCs have generally been included in the SPZ (see Appendix D).

Rare, endangered, disjunct or endemic faunal species

The process for identifying significant fauna localities in the joint project was similar to that used for developing the zoning scheme in this Plan. Both drew heavily on data from pre-logging flora and fauna surveys and on EVC and growth-stage mapping provided by the old-growth forest report (Woodgate *et al.* 1994). An earlier part of this chapter outlines conservation guidelines for key species in this category. Species without specific guidelines are covered by other strategies that protect their habitat (heathlands, rainforest, old-growth forest etc.). Appendix J provides a full list of species in this group and their status.

Rich fauna sites

Sites of known high species richness (compared with predicted sites) were identified using pre-logging flora and fauna survey data. In accordance with the fauna conservation guidelines, all have been included in the SMZ or SPZ.

Important fauna breeding areas

Breeding sites are important for maintaining viable populations, especially for species with restricted breeding areas such as cave bats and some water-birds. Most areas in this category are in national parks. Those in State forest have been placed in the SPZ.

Fauna species at the limit of their distributional range

It is important to protect fauna populations at their distributional limit to minimise risks of a reduction in their range and to conserve genetic diversity. Rare and threatened species in this category are covered by the fauna conservation strategy (see also Appendix J). No special provisions have been made for those that are common and not sensitive to timber harvesting. These will be adequately conserved by conservation reserves and other strategies. For example, the Black-faced Monarch and the Brown Gerygone are common throughout the FMA, and large numbers occur in conservation reserves. In addition, both species inhabit rainforest, which is protected in all land-use categories.

Fauna and flora type localities

Type localities are important for historical and taxonomic reasons. Where the site has been modified, or the species no longer occurs there, affording special protection measures has little point. Type localities for fauna, where the species persists at the site, and type localities for rare or threatened flora have been included in the SMZ or SPZ.

Teaching sites

All teaching sites with national estate values have been placed in the SMZ to ensure that inappropriate activities do not compromise those values.

Chapter 7

FOREST ROADS

A network of over 5000 km of roads and tracks currently services the FMA. While the Roads Corporation (VicRoads) is responsible for major highways, and the Shire of East Gippsland for roads providing access to private land, most of the network is in forest areas, and directly managed by CNR. The timber industry is responsible for the construction, maintenance and subsequent rehabilitation of temporary roads providing access to logging coupes.

Forest roads are used for timber extraction, fire protection, recreation and other public access to parks and State forest and management purposes. Roads can contribute to sedimentation of streams, disrupt the forest landscape and facilitate the introduction of pest plants and animals, especially if they are inappropriately constructed or poorly maintained. The existing road and track network has evolved with the settlement of East Gippsland, and changing demands for access to natural resources and fire protection. Consequently the standard and extent of the network is inadequate in some areas. In particular the network needs to be extended and many roads and tracks upgraded to meet the needs of the timber industry in the next few decades. Other parts of the network have too many tracks and may need to be rationalised. Clearly there is a need to identify the network of permanent roads and tracks required for the use and management of public land in the FMA. The purpose, required standard and maintenance responsibility for each road or track in the network must also be defined.

The zoning scheme in this Plan, together with the national park management plans and fire protection plans covering the FMA clearly show the areas where timber production, conservation and fire protection have high priorities. A framework has therefore been formulated for the planning and establishment of a permanent road and track network on public land.

Aims

- *Establish and maintain a permanent road and track network for the use and management of public land.*
- *Design and maintain roads to minimise environmental impacts and provide adequate safety standards.*

7.1 THE PERMANENT ROAD AND TRACK NETWORK

The Code of Forest Practices for Timber Production (Code) and FMA prescriptions set out principles for environmental protection during road construction, improvement and maintenance. Some roads built prior to development of the Code do not meet required standards. Identification of the permanent road and track network will clearly highlight roads that should be upgraded to meet required standards, or be closed and rehabilitated.

Increasing the standard of roads in areas suited to wet-weather logging (that is, gentle slopes, stable soils and close to major roads) enables log haulage during wet periods and evens out timber haulage through the year. This enables better dispersal of coupes, more efficient use of management resources and greater economic efficiency.

ACTIONS:

A permanent road and track network will be established and maintained. Temporary roads providing access to logging coupes (currently defined as roads required less than three years in ten) will remain the responsibility of the timber industry.

An inventory of roads and tracks in the FMA will be developed. For each road and track in the FMA it will detail:

- its purpose;*
- the standard to which it should be maintained; and*
- its current condition and maintenance requirements.*

Tracks that are no longer required will be progressively closed and rehabilitated. Records will be kept of tracks that have been closed, in case they need to be re-opened for emergency purposes.

Rolling three-year road construction and maintenance schedules will be prepared as part of the annual Wood Utilisation Plan. Map 26 indicates major extensions to the road network that are expected to be required for timber production during the life of this Plan. It is expected that approximately 140 km of new roads will be constructed.

New roads and major road upgrades will be designed to:

- conform with the Code of Forest Practices for Timber Production and local prescriptions.*
- improve access to areas suitable for timber harvesting in wetter months.*
- minimise log haulage distances.*
- minimise environmental effects, the number of major stream crossings and encroachment on the SPZ.*

Roads classified as scenic drives (see Section 6.2, Map 26 and Appendix O) will be maintained, upgraded and signposted. Signs will be erected advising users of log truck traffic and seasonal road closures.

The location of all permanent and major road works will be specified in Wood Utilisation Plans.

7.2 ROAD CLOSURES

Temporary, seasonal or permanent closures of roads and tracks are sometimes necessary for public safety or protection of natural values or to prevent road damage. Temporary closures are imposed during road works, fuel-reduction or regeneration burning or tree felling. Access tracks to logging coupes may be closed temporarily at short notice after heavy rain. Seasonal closure of some roads and tracks during wetter months prevents road damage and protects water quality. Approximately 65 roads and tracks in the FMA are closed from June to October each year (the period can be extended depending on weather conditions). Some roads and tracks that are unstable, potentially unsafe or no longer required, or that threaten environmentally sensitive areas, need to be permanently closed.

ACTIONS:

Temporary closures of roads and tracks will be made as necessary to reduce environmental impacts, protect the road surface and ensure public safety.

In consultation with the Victorian Association of Four-wheel-drive Clubs, the Shire of East Gippsland, local tourism operators and logging contractors, a number of roads and tracks will be closed seasonally. These will be published in regional and Melbourne newspapers.

Roads and tracks not required as part of the permanent network will be closed and rehabilitated. Records of these will be maintained for use in emergencies such as wildfire or search and rescue.

Chapter 8

PLAN IMPLEMENTATION

8.1 IMPLEMENTATION AND REVIEW

The management strategies, zoning scheme and other actions described in preceding chapters are designed to fulfil two main aims of this Plan - conservation of environmental values and sustainable use of natural resources, including maintenance of current legislated sustainable yields of sawlogs. **The Plan applies until 2006 or until other circumstances warrant a major review.** Native forest management must, however, be responsive to new information, changes in government policy, community expectations and technology, as well as fluid market conditions.

The Senior Forester for the FMA will be responsible for implementation of this Plan which will entail:

- adoption of the zoning scheme for day-to-day forest management activities.
- ongoing multi-disciplinary planning to ensure that management strategies and the zoning scheme are up to date and based on the best available information.
- forward planning of timber harvesting and associated activities (Wood Utilisation Plans).
- implementation of specific initiatives.
- monitoring and reporting to assess the effectiveness of the Plan and its implementation

A key feature of this Plan is the use of management guidelines for natural values, and the translation of these into the Special Protection and Special Management Zones. **Inherent in the process is the provision to progressively refine management guidelines and the zoning scheme in response to new information.** This is essential to ensure that native forest management is based on the best available information and is abreast of developments in natural resource management. Refinements of management guidelines or the zoning scheme must also be made in an objective, systematic manner to avoid disruption to the forward planning and conduct of timber harvesting. A multi-disciplinary approach is essential to this process.

ACTION:

Each year the Senior Forester will:

- *oversee preparation of the Wood Utilisation Plan.*
- *prepare detailed plans for harvesting of approved coupes in the Special Management Zone.*
- *consider new information and, if necessary, make recommendations on possible refinements or amendments to management strategies or the zoning scheme. Guidelines for reviewing management strategies and management zones are set out below.*

The zoning scheme will be digitised at a scale of 1:25 000, printed on base maps to be used for day-to-day forest management activities and made available for public inspection.

GUIDELINES FOR REVIEWING MANAGEMENT STRATEGIES AND ZONES

Management guidelines in this Plan will be reviewed under the following circumstances:

- when research information on key species becomes available (for example, on completion of the current Long-footed Potoroo research, or population viability analyses for other threatened species).
- if new species are identified that are considered threatened.
- as required by new legislation, policies or action statements.

Management zone boundaries may require review if:

- changes to management strategies for certain species or values mean that the zoning system is more or less than adequate for those values.
- field inspections or better mapping indicate that minor amendments are required to create practical management boundaries.
- a zone is found not to contain the values for which it was identified; amendments may be required to ensure that conservation targets are met.
- new records are listed for species whose conservation targets have not been met.
- new records of some species warrant changes to zones to consolidate an area of good quality habitat in exchange for an area of poorer-quality habitat.
- existing boundaries are found to place unnecessary restrictions on the practical access to areas for timber production or for infrastructure development (easements etc).

Proposed zone amendments will be assessed according to whether they:

- adequately conserve the values listed in the zoning scheme register (Appendix B); there should be no net deterioration in the standard of protection of values in the SPZ.
- maintain a well-distributed, inter-connected network of protected areas.
- minimise practical problems for timber harvesting or access in the General Management Zone.
- make the best use of areas that are unavailable for timber harvesting due to other considerations such as slope, access and site quality.
- avoid conflict with strategic burning corridors.

ACTION:

Each year an up-to-date zoning map and a list of any proposed zone amendments will be made available for public viewing and comment. Following consideration of comments received and relevant specialist advice, approval will be sought from the Secretary of the Department of Conservation and Natural Resources for adoption of the revised zones.

The process for reviewing management strategies and zones focuses primarily on forest management. If any other proposals for the use of public land are developed (for example major highway realignments, pipelines etc.), they would be subject to an appropriate environmental assessment process. Zones are not designed to prevent such developments, and for large or complex proposals a complete environmental effects study would be required in accordance with the Victorian *Environmental Effects Act 1978*. In certain circumstances, such a study may also need to comply with the requirements of the *Commonwealth Environmental Effects (Impact of Proposals) Act 1974*. Final approval of such proposals would be the responsibility of the relevant State and/or Commonwealth ministers.

8.2 WOOD UTILISATION PLANS

While the zoning scheme establishes the area of State forest available for timber harvesting, the volume of forest products to be supplied is specified in sawlog licences issued on the basis of sustainable yield forecasts. Sawlog licence conditions require the Department to provide licensees with Wood Utilisation Plans (WUPs) by 31 March each year. The WUPs specify the individual areas (coupes) of State forest that are approved for harvesting to meet licence commitments. They are supplied to consortiums of sawlog licensees (logging groups) who organise the harvesting, grading and transport of logs. Harvesting is supervised by the Department and must be conducted by licensed operators in accordance with the Code of Forest Practices for Timber Production.

In the past, preparation of WUPs involved individual consideration of each proposed logging coupe to ensure compliance with policy commitments to conserve forest values (flora, fauna, landscape, soil and recreation opportunities). The information formerly used to check individual coupes has been used to develop the management strategies and zoning scheme in this Plan. This will streamline preparation of WUPs and remove some of the delays and difficulties inherent in the old system. New information will be considered with a view to the possible amendment of the zoning scheme or management strategies rather than considering coupes in isolation.

ACTION:

Three-year, rolling Wood Utilisation Plans consistent with this Plan will be prepared in accordance with Departmental guidelines.

8.3 MONITORING AND REPORTING

As part of its focus on performance and management accountability, the Forests Service is revising its annual reporting process. Reporting on implementation of this Plan will be part of that process.

ACTION:

As part of the annual report for the FMA, the Senior Forester will be required to report on implementation of this Plan.

REFERENCES

- ABRG (1985) Australian Biological Resources Group The impacts of timber production and harvesting on native flora and fauna. In: Report of the Board of Inquiry into the Timber Industry Vol 2. Victorian Government Printing Office, Victoria.
- AHC and CNR (in prep) Australian Heritage Commission and Department of Conservation and Natural Resources National Estate Values in East Gippsland, Victoria. Australian Heritage Commission and Department of Conservation and Natural Resources, Victoria.
- Avis (1993) Orbost Heathland Management Plan. Department of Conservation and Natural Resources, Orbost, Victoria.
- Bartlett, A.G. (1990) Regional Fire Protection Plan - Orbost Region. Department of Conservation, Forests and Lands, Victoria.
- Brady, A., and Perham, G. (1993) Historic places in the East Gippsland Forest Management Area. A report for the Australian Heritage Commission and the Department of Conservation and Natural Resources. Department of Conservation and Natural Resources, Victoria. (unpublished).
- Bramwell, M. D., Downe, J. M., Hines, H. B., Kemp, J. E., Mazzer, T. M., O'Neill, G. C. and Trumbull-Ward, A. V. (in prep.) Flora and Fauna of the Yeerung Forest Block, including Sydenham Inlet - Cape Conran Coastal Park, East Gippsland, Victoria. Ecological Survey Report No. 43, Department of Conservation and Natural Resources, Gippsland Area (unpublished).
- Briggs, J. D. and Leigh, J. H. (1988) Rare or Threatened Australian Plants. Australian National Parks and Wildlife Service, Canberra.
- Brown, G. W., Horrocks, G. F. B., Lunt, I. D., Meggs, R. A. and Sandiford, E. M. (1987) Flora and Fauna of the Noorinbee Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 18, Department of Conservation, Forests and Lands, Victoria.
- Burgman, M.A. and Ferguson, I.S. (1995) Rainforest in Victoria - a review of the scientific basis of current and proposed protection measures. Forests Service Technical Report 95-4. Department of Conservation and Natural Resources, Victoria.
- Cameron, D. G. (1992) A Portrait of Victoria's Rainforests: Distribution, Diversity and Definition, in: Gell, P. and Mercer, D. (eds) Victoria's Rainforests: Perspectives on Definition, Classification and Management. Monash Publications in Geography No. 41. Department of Geography and Environmental Science, Monash University, Melbourne.
- Campbell, R. G. (1995 in press) Development and evaluation of sustainable silvicultural systems for the multiple purpose management of Mountain Ash forest. A discussion paper for consideration by the Forest Service Executive. VSP Internal Report No. 29. Department of Conservation and Natural Resources, Victoria (unpublished).
- Carr, G. W., Horrocks, G. F. B., Cherry, K. A., Opie, A. M., Triggs, B. E. and Schulz, M. (1984) Flora and Fauna of the Coast Range Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 4, Department of Conservation, Forests and Lands, Victoria.
- CFL (1987) Department of Conservation, Forests and Lands Victoria's Rainforests: An Overview. Victorian Government Printing Office, Melbourne.
- CFL (1989a) Department of Conservation, Forests and Lands Code of Forest Practices for Timber Production (Review No. 1), Department of Conservation, Forests and Lands, Victoria.
- CFL (1989b) Department of Conservation, Forests and Lands Errinundra National Park Proposed Management Plan. Orbost Region and National Parks and Wildlife Division, Department of Conservation, Forests and Lands, Victoria.
- Cherry, K. A., Brown, G. W., Horrocks, G. F. B., Opie, A. E. and Triggs, B. E. (1986) Flora and Fauna of the Buldah Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 7, Department of Conservation, Forests and Lands, Victoria.

- Chesterfield, E. A., Henry, S. R., Hurley, V. A. and Schulz, M. (1988) Flora and Fauna of the Brodribb Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 19, Department of Conservation, Forests and Lands, Victoria.
- CNR (1993a) Department of Conservation and Natural Resources Croajingolong National Park. Draft Management Plan. National Parks Service and Gippsland Area. Department of Conservation and Natural Resources, Victoria.
- CNR (1993b) Department of Conservation and Natural Resources Snowy River National Park. Draft Management Plan. National Parks Service and Gippsland Area. Department of Conservation and Natural Resources, Victoria.
- CNR (1995a) Threatened Fauna in Victoria 1995. Department of Conservation and Natural Resources, Victoria.
- CNR (1995b). Proposed Code of Forest Practices for Timber Production. Department of Conservation and Natural Resources, Victoria.
- Commonwealth of Australia (1994) Draft Ecotourism Strategy.
- Commonwealth of Australia (1992) National Forest Policy Statement. A New Focus for Australia's Forests.
- DWR (1990) Department of Water Resources The Environmental Condition of Victorian Streams. Victorian Government Printing Office, Melbourne.
- Earl, G. E., Brown G. W., Cherry, K. A., Horrocks, G. F. B. and Volleburgh, P. J. (1989) Flora and Fauna of the Ellery Forest Block (South and East), East Gippsland, Victoria. Ecological Survey Report No. 26, Department of Conservation., Forests and Lands, Victoria.
- Featherston, G. R. (1985) Harvesting history of a coastal forest area in East Gippsland in relation to eucalypt species composition, Research Branch Report No. 290. State Forests and Lands Service. Department of Conservation, Forests and Lands, Victoria.
- FIS (1994) Flora Information System. Arthur Rylah Institute for Environmental Research, Department of Conservation and Natural Resources.
- Gillespie, G. R., Earl, G. E., Horrocks, G. F. B., Humphreys, R. K., Lobert, B. O. and Lucas, G. R. (1992) Flora and Fauna of the Stony Peak and Genoa Blocks, East Gippsland, Victoria. Ecological Survey Report No. 33. Department of Conservation and Environment, Victoria.
- Gillespie, G. R., Barker, M. J., McIntyre, A. D., Murray, A. J., Rich, C. J. and Sutter, G. R. (in prep.) Flora and Fauna of the Drummer Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 44, Department of Conservation and Natural Resources, Gippsland Area (unpublished).
- GIS (1995). Geographic Information System. Department of Conservation and Natural Resources, Victoria.
- Government of Victoria (1986) Victorian Timber Industry Strategy. Victorian Government Printing Office, Melbourne.
- Government of Victoria (1988) Far East Gippsland Tourism Strategy. Victorian Government Printing Office, Melbourne.
- Grinsbergs, A. M. (1993) A study of land routes of human movement in East Gippsland. A report for the Australian Heritage Commission (unpublished).
- Gullan, P. K., Cheal, D. C. and Walsh, N. G. (1990). Rare or Threatened Plants in Victoria. Department of Conservation and Environment, Victoria.
- HARIS (1989) Hardwood Timber Resources in the East Gippsland Forest Management Area. Resource Assessment Report No. 89/01 Department of Conservation, Forests and Lands, Victoria.
- HARIS (1993) Hardwood Timber Resources in the East Gippsland Forest Management Area. Resource Assessment Report No. 93/01 Department of Conservation and Natural Resources, Victoria.
- Henry, S. R., Cherry, K. A., Hurley, V. A., Opie, A. M. and Schulz, M. (1988) Flora and Fauna of the Tennyson Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 21, Department of Conservation, Forests and Lands, Victoria.

- Horrocks, G. F. B., Opie, A. M., Carr, G. W., Cherry, K. A., Brown, G. W., Craig, S. A. and Triggs, B. E. (1984) Flora and Fauna of the Ellery Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 3, Department of Conservation, Forests and Lands, Victoria.
- Jayasuriyah, D. and O' Shaughnessy, P. (1994) Water Yield Investigations from the Betka River Catchment. Consultants Report to the Mallacoota Water Board. Melbourne Water, Victoria (unpublished).
- Kavanagh, R.P. and Rohan-Jones W.G. (1982). Calling behaviour of the Yellow-bellied Glider (*Petaurus australis*) Shaw (*Marsupialia: Petauridae*). Aust. Mammal. 5: 95-111.
- Kemp, J. E., Mazzer, T. M., Pollock, A. B., McIntyre, A. D., Mitchell, A. T. and Murray, A. J. (in prep.) Flora and Fauna of the Hartland and Tildesley Forest Blocks, East Gippsland, Victoria. Ecological Survey Report No. 49, Department of Conservation and Natural Resources, Gippsland Area (unpublished).
- Kirkpatrick, J. B. and Brown, M. J. (1991) Reservation Analysis of Tasmanian Forests. Resource Assessment Commission Forest and Timber Inquiry Consultancy series, Australian Government Printing Service, Canberra.
- Kuczera, G. (1985) Prediction of water yield reduction following a bushfire in Ash-mixed species eucalypt forest. Water Supply Catchment Hydrology Research Report MMBW-W-0014, Melbourne Metropolitan Board of Works, Victoria.
- LCC (1977) Land Conservation Council Final Recommendations. East Gippsland Study Area. Victorian Government Printing Office, Melbourne.
- LCC (1979) Land Conservation Council Final Recommendations. Alpine Area. Victorian Government Printing Office, Melbourne.
- LCC (1983a) Land Conservation Council Final Recommendations. Gippsland Lakes Hinterland Study Area. Victorian Government Printing Office, Melbourne.
- LCC (1983b) Land Conservation Council Final Recommendations. Alpine Area Special Investigation. Victorian Government Printing Office, Melbourne.
- LCC (1986) Land Conservation Council Final Recommendations. East Gippsland Area (Review). Victorian Government Printing Office, Melbourne.
- LCC. (1991a) Land Conservation Council Rivers and Streams Special Investigation Final Recommendations. Victorian Government Printing Office, Melbourne.
- LCC (1991b) Land Conservation Council Wilderness Special Investigation Final Recommendations. Victorian Government Printing Office, Melbourne.
- Lobert, B. O., Gillespie, G. R., Peacock, R. J. and Robertson, D. (1991) Flora and Fauna of the Goolengook Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 35, Department of Conservation, Forests and Lands, Victoria.
- Long, I. (1990) Regional Fire Protection Plan - Bairnsdale Region. Department of Conservation, Forests and Lands, Victoria.
- Loyn, R. H., Cameron, D. G., Traill, B. J., Sloan, J. F., Malone, B. S., Schulz, M., Earl, G. E. and Triggs, B. E. (1992) Flora and Fauna of the Cooagalah Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 20, Department of Conservation, Forests and Lands, Victoria.
- Lugg, A., Marsh, P., Bartlett, A. and King, F. (comp.) (1993) Statement of Resources, Uses and Values for the East Gippsland Forest Management Area. Department of Conservation and Natural Resources, Victoria.
- Macfarlane, M. A., Loyn, R. H., Chesterfield, E. A., Traill, B. J. and Triggs, B. E., (1984) Flora and Fauna of the Scorpion and Dawson Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 5, Department of Conservation, Forests and Lands, Victoria.
- Macfarlane, M. A., Schulz, M., Parkes, D., Traill, B. J. and Triggs, B. (1987) Flora and Fauna of the Buckland Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 8, Department of Conservation, Forests and Lands, Victoria.
- Mansergh, I. M., and Belcher, C. (1992) Tiger Quoll (*Dasyurus maculatus*). Flora and Fauna Guarantee Action Statement No. 15. Department of Conservation and Environment, Victoria.
- Mazzer, T. (1994) Giant Burrowing Frog (*Heleioporus australiacus*) Flora and Fauna Guarantee Action Statement No. 61. Department of Conservation and Natural Resources, Victoria.

- McIntyre, A. D., Gillespie, G. R., Mitchell, A. T., Murray, A. J., Pollock, A. B., Rich, C. J. and Sutter, G. R. (in prep.) Flora and Fauna of the Tamboon and Clinton Study Area, East Gippsland, Victoria. Ecological Survey Report No. 46, Department of Conservation and Natural Resources, Gippsland Area (unpublished).
- McRae-Williams, M. S., Rosengren N. J. and Kraemers, S. M. (1981). Sites of Geological and Geomorphological Significance in East Gippsland, Victoria. Environmental Studies Publication no. 320. Ministry for Conservation, Victoria.
- Murphy, S. (1995). Regeneration and reforestation stocking in native State forest (1989/90 - 92/93). Forests Service Technical Report 95-***. Department of Conservation and Natural Resources, Victoria.
- O'Neill, G. C., Bramwell, M. D., Downe, J. E., Hines, H. B., Kemp, J. A., Murray, A. J. and Trumbull-Ward, A. V. (in prep.) Flora and Fauna of Martins Creek and Yalmy (South) Forest Blocks, East Gippsland, Victoria. Ecological Survey Report No. 45, Department of Conservation and Natural Resources, Gippsland Area (unpublished).
- Opie, A. M., Cherry, K. A., Horrocks, G. F. B., Carr, G. W., Schulz, M. and Triggs, B. (1984) Flora and Fauna of the Yalmy Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 2, Department of Conservation, Forests and Lands, Victoria.
- Opie, A. M., Gillespie, G., Henry, S. R. and Hurley, V. A. (1990) Flora and Fauna of the Coast Range Forest Block (southern part), East Gippsland, Victoria. Ecological Survey Report No. 24, Department of Conservation, Forests and Lands, Victoria.
- Peacock, R. J., Brown, G. W., Duncan, S., Gillespie, G. R., Robinson, D. and Scotts, D. J. (1992) Flora and Fauna of the Sardine Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 34, Department of Conservation and Environment.
- Peacock, R. J., Duncan, S., Gillespie, G. R. and Lobert, B. O. (in prep.) Flora and Fauna of the Goongerah and Bowen Blocks, East Gippsland, Victoria. Ecological Survey Report. Department of Conservation and Natural Resources, Victoria.
- Peel, W. D., Duncan, S., Gillespie, G. R., Lobert, B. O. and Westaway, J. (in prep.) Flora and Fauna of the Tabby and Snowy Forest Blocks, East Gippsland, Victoria. Ecological Survey Report. Department of Conservation and Natural Resources, Victoria.
- Radic, J., Runnalls, R., Weir, G., and Chesterfield, E. (1985). Vegetation map of the Errinundra Plateau (1: 30 000). Department of Conservation Forests and Lands, Victoria.
- Recher, H. F., Shields, J., Kavanagh, R., and Webb, G. (1987) Retaining remnant mature forest for nature conservation at Eden, New South Wales: A review of theory and practice. In: Saunders, D. A. et al. (1987) Nature Conservation: The role of remnants of native vegetation. Surrey Beatty and Sons.
- Saxon, M. J., Henry, S. R. and Seebeck, J. H. (1994) Management strategy for the conservation of the Long-footed Potoroo (*Potorous longipes*), in Victoria. Arthur Rylah Institute for Environmental Research Technical Report Series No. 127. Department of Conservation and Natural Resources, Victoria.
- Sutter, G. R., Gillespie, G. R., Kemp, J. E., Mazzer, T. M., McIntyre, A. D., Murray, A. J., Pollock, A. B. and Rich, C. J. (in prep.) Flora and Fauna of the Maramingo, Binns and Wroxham (East) Forest Blocks, East Gippsland. Ecological Survey Report No. 47, Department of Conservation and Natural Resources, Gippsland Area (unpublished).
- Thomas, V. C., Henry, S. R., and Baker-Gabb, D. J. (1994) Long Footed Potoroo (*Potorous longipes*). Flora and Fauna Guarantee Action Statement No. 58. Department of Conservation and Natural Resources, Victoria.
- Westaway, J., Henry, S. R., Gillespie, G. R., Lobert, B. O., Scotts, D. J. and Mueck, S. G. (1990) Flora and Fauna of the West Errinundra and Delegate Forest Blocks, East Gippsland, Victoria. Ecological Survey Report No. 31, Department of Conservation and Environment, Victoria.
- Wilson N. W., and Fagg P. C. (1994) Hardwood coupe regeneration in native State forest. 1989/90 - 91/92. Forests Technical Report No. 13. Department of Conservation and Natural Resources, Victoria.

- Williamson, D. N. and Calder, S. W. (1979) Visual resource management of Victoria's forests: A new concept for Australia. *Landscape Planning*. 6: 313-41.
- Woodgate, P.W., Peel, W.D., Ritman, K.T., Coram, J.E., Brady, A., Rule, A.J. and Banks, J.C.G. (1994) A Study of the Old-growth Forests of East Gippsland. Department of Conservation and Natural Resources, Victoria.
- Yugovic, J. V., Henry, S. R., Brown, G. W. and Meggs, R. A. (1987) Flora and Fauna of the Sisters Forest Block, East Gippsland, Victoria. Ecological Survey Report No. 17, Department of Conservation Forests and Lands, Victoria.

APPENDICES

APPENDIX A

LAND CATEGORIES IN THE FOREST MANAGEMENT AREA

For the purposes of this plan the various land categories identified by the Land Conservation Council (LCC 1977, 1979, 1983a, 1983b, 1986, 1991a, 1991b) in the Forest Management Area have been grouped as follows:

AREAS SUBJECT TO THIS PLAN

STATE FOREST

State Forest
Natural Feature Zones

AREAS NOT SUBJECT TO THIS PLAN

CONSERVATION RESERVES

(Taken into account in development of State Forest conservation strategies)

Bushland Reserve
Cave Reserve
Coastal Park
Coastal Reserve
Education Area
Flora & Fauna Reserve
Flora Reserve
Gippsland Lakes Reserve
Lake Reserve
National Park
Natural Features & Scenic Reserves
Reference Area
Regional Park
Scenic Reserve
State Park
Streamside Reserve
Wildlife Co-operative Management
Wildlife reserve
Commonwealth Land

OTHER RESERVES AND PUBLIC LAND

Other Reserves and Public Land
Agriculture
Historic Reserve
Minerals and Stone
Public Land Water front Reserve
Recreation Reserve
Township Land
Uncommitted
Utilities & Survey

PRIVATE LAND

APPENDIX B

ZONING SCHEME REGISTER

This lists the values which form the basis of the Special Protection Zone (SPZ), Special Management Zone (SMZ) and Special Management Sites (SMS). It should be used in conjunction with Map 26.

Explanatory notes:

Forest management block and site numbers The Forest Management Area (FMA) is divided into 103 forest management blocks (FMBs), each averaging about 10 000 ha in size. These are grouped into the four Forest Districts of the FMA - Nowa Nowa, Orbost, Cann River and Bendoc. Sites are listed and numbered according to the block in which they fall (or are mostly in). For example, Colquhoun forest management block (block no. 801) contains 11 sites, numbered 801/01 to 801/11.

Ecological Vegetation Classes (EVCs) are only listed when a major reason for designation of a SPZ was to improve the conservation status of a particular EVC. A common EVC such as Damp Forest, for example, would be listed when it was otherwise poorly represented in conservation reserves in that part of the FMA. EVCs that are rare or at the edge of their range, and uncommon forms of EVCs are also listed. Box—ironbark ridges which are not a distinct EVC (compared with Foothill Box Ironbark Forest) are the basis of some SPZs and are referred to as 'box—ironbark.'

Old-growth forest (OG) and negligibly disturbed forest (ND), as described by Woodgate *et al.* (1994), are listed when they are a major reason for creation of the site; for example: OG (Wet Forest). Other (usually smaller) examples occur elsewhere in the SPZ and SMZ. Some areas in the SPZ not formally recognised as old-growth forest, but known to have old-growth characteristics, are referred to as having 'old-growth characteristics (local observations)'.

Rare and threatened plant species Category 1 and 2 species (see Appendix H) are listed under their scientific names.

Sites of significance for rainforest (RFSOS) Many sites in the SPZ incorporate all or part of these. They are referred to by their number, name and significance rating - such as RFSOS (38 Lower Snowy - national). WTR and CTR refer to Warm Temperate and Cool Temperate Rainforest respectively.

Fauna values Only species or values that have conservation guidelines for their management in State forest are listed (see Appendix J). The requirements of the conservation guidelines are often met by a number of adjoining zones. Appendix J illustrates this for large forest owls.

Linear reserves will be of 200-m average width unless otherwise specified (usually 100-m buffers on both sides of a stream). This network includes the Heritage Rivers, Natural Features Zones and Representative Rivers identified by the Land Conservation Council.

National estate (NE) Areas qualifying for listing on the Register of the National Estate cover much of the FMA. Conservation of these values is built into other strategies. Consequently, national estate values are only listed as such if they are the primary reason for designation of the site, or if the site makes a significant contribution to the representative conservation of a particular extensive national estate value. For example: NE (Historic site: Timber workers' huts, Glen Arte) or NE (Natural Landscape).

Sites of biological significance (SOS) Many sites in the SPZ and SMZ include all or part of sites of biological significance identified in published pre-logging flora and fauna surveys. Cross-references are provided to ecological survey reports in the following way: 2SOS 8 refers to SOS number 8 in the ecological survey report Westaway *et al.* (1990). The following reports provide more information on the values of these areas:

- | | | |
|--------------------------------------|-------------------------------------|----------------------------------|
| 1. Macfarlane <i>et al.</i> (1984) | 7. Peacock <i>et al.</i> (1992) | 13. Yugovic <i>et al.</i> (1987) |
| 2. Westaway <i>et al.</i> (1990) | 8. Opie <i>et al.</i> (1984) | 14. Cherry <i>et al.</i> (1986) |
| 3. Lobert <i>et al.</i> (1991) | 9. Gillespie <i>et al.</i> (1992) | 15. Henry <i>et al.</i> (1988) |
| 4. Chesterfield <i>et al.</i> (1988) | 10. Brown <i>et al.</i> (1987) | 16. Opie <i>et al.</i> (1990) |
| 5. Earl <i>et al.</i> (1989) | 11. Loyn <i>et al.</i> (1992) | 17. Carr <i>et al.</i> (1984) |
| 6. Horrocks <i>et al.</i> (1984) | 12. MacFarlane <i>et al.</i> (1987) | |

Data from the following more recent pre-logging reports was also used extensively in preparation of the Plan (these are yet to be published but copies may be viewed at the Orbost office of CNR):

- | | | |
|-----------------------------------|-----------------------------------|------------------------------------|
| Kemp <i>et al.</i> (in prep.) | Peel <i>et al.</i> (in prep.) | Gillespie <i>et al.</i> (in prep.) |
| Bramwell <i>et al.</i> (in prep.) | Sutter <i>et al.</i> (in prep.) | Peacock <i>et al.</i> (in prep.) |
| O'Neill <i>et al.</i> (in prep.) | McIntyre <i>et al.</i> (in prep.) | |

Research sites (RS) have a unique number and brief description, such as 'RS 19 - long-term monitoring of dieback'. Full details are kept at the Centre for Forest Tree Technology, Orbost office. The abbreviation VAUS refers to Value Adding Utilisation System.

Confidential sites. The values of a few sites are not listed because they support species that are potentially threatened by illegal collection. The Flora, Fauna and Fisheries co-ordinator at Orbost should be consulted about these sites.

NOWA NOWA FOREST DISTRICT

Forest Block & site number	Zone	Area (ha)	Attributes
Colquhoun			
801/01	SPZ	1,044	Bat Cave (Common Bent-wing and Eastern Horseshoe-bats); Sooty Owl; Masked Owl; Koala; OG (Limestone Box Forest, Lowland Forest, Damp Forest and Riparian Scrub); <i>Pseudoraphis paradoxa</i>
801/02	SPZ	565	Koala; Riparian Scrub Complex; Riparian Forest; <i>Pseudoraphis paradoxa</i> ; NE (Historic sites: Cossick's Weir and Stony Creek Trestle Bridge on the Orbost - Bairnsdale railway line); part of Colquhoun Forest Drive
801/03	SPZ	70	Giant Burrowing Frog
801/04	SPZ	40	Giant Burrowing Frog
801/05	SPZ	129	Linear reserve (Stony Ck); Riparian Forest
801/06	SPZ	60	Linear reserve (Stony Ck tributary)
801/07	SPZ	49	Linear reserve (Mundic Ck tributary); Grey Goshawk; Koala (non resident)
801/08	SMS	11	NE (Historic site: Colquhoun Railway Siding)
801/09	SMS	5	<i>Marsdenia flavescens</i> ; <i>Olearia viscosa</i>
801/10	SMZ	176	Rare butterfly locality
801/11	SMZ	15	RS 20 - Planting and sowing trials
Tildesley			
802/01	SMZ	776	Masked Owls; Powerful Owl; Eastern Horseshoe-bat; Square-tailed Kite; Limestone Box Forest
802/02	SPZ	20	<i>Pseudoraphis paradoxa</i> ; 40-metre buffers around Irish Water-holes
802/03	SPZ	88	Linear reserve (Hartland River); Limestone Box Forest
802/04	SMS	20	<i>Pterostylis grandiflora</i>
802/05	SPZ	343	Linear reserve (Hospital Ck); rich assemblage of native freshwater fish; Limestone Pomaderris Shrubland; Limestone Box Forest; Riparian Forest; <i>Asplenium trichomanes</i> ssp. <i>quadrivalens</i> ; <i>Pomaderris onaria</i> ssp. <i>calicicola</i>
802/06	SMS	20	RS 17 - operational regeneration treatment of dieback sites
802/07	SMS	20	RS 18 - long-term rehabilitation of coastal forest sites
802/08	SMS	20	RS 19 - long-term monitoring of dieback
802/09	SMZ	82	RS 26 - Tostaree eucalypt plantation trials

Forest Block & site number	Zone	Area (ha)	Attributes
Boggy			
803/01	SPZ	89	Giant Burrowing Frog
803/02	SPZ	595	ND (Lowland Forest and Shrubby Dry Forest)
803/03	SPZ	89	Linear reserve (Breakfast Ck)
803/04	SPZ	134	Linear reserve (Yellow Waterholes Ck)
803/05	SPZ	127	Linear reserve (Stony Ck)
803/06	SPZ	57	Linear reserve (Dead Horse Ck)
803/07	SPZ	342	Clay Heathland; NE (predicted high fauna species richness)
803/08	SPZ	21	Linear reserve (Hollaways Rd); Species-rich 'box-ironbark' forest
803/09	SPZ	370	Linear reserve (Boggy Ck Natural Features Zone); extends into Yellow Water Holes FMB
803/10	SPZ	75	Clay Heathland
Wairewa			
804/01	SPZ	185	Linear reserve (Hartland River) - 200-m buffer on both sides between Wombat Rd and Creek junction; ND Damp Forest
804/02	SPZ	168	Linear reserve (Lower Hartland River)
804/03	SMS	20	RS 19 - long-term monitoring of dieback
804/04	SMS	20	RS 17 - operational regeneration treatment of dieback sites
804/05	SMS	20	RS 18 - long-term rehabilitation of coastal forest sites
Hospital			
805/01	SPZ	1,544	Powerful Owl; Sooty Owl; Masked Owl; high density of arboreal mammals; Damp Forest; OG (Lowland Forest and Shrubby Dry Forest)
Yellow Water Holes			
806/01	SPZ	159	Linear reserve (Yellow Water Holes Ck)
806/02	SPZ	52	Linear reserve (Breakfast Ck)
Tara			
807/01	SPZ	86	Linear reserve (Link to Cutfinger Education Area in Yellow Water Holes FMB)
807/02	SMS	10	NE (Historic sites: Mt Tara fire tower site, World War II sites and gold mining areas)
807/03	SMS	20	NE (Historic site: Monach Mine - Tara Range)
807/04	SPZ	111	Linear reserve (Lady Torr Ck)
Kenny			
808/01	SPZ	1,907	Heathy Dry Forest; Clay Heathland; OG (Rocky Outcrop Scrub, Shrubby Dry and Damp Forest); ND (Damp Forest and Shrubby Dry Forest); high vegetation diversity; NE (Place Important for Succession; Natural Landscapes; Refuge Dependent EVCs); extends into Yellow Water Holes FMB
808/02	SPZ	34	Sand Heathland
Victoria			
809/01	SPZ	118	Koala release site 1991
809/02	SPZ	36	Limestone Grassy Woodland
809/03	SPZ	67	Linear reserve; Riparian Forest
809/04	SPZ	98	Linear reserve (Snake Ck along to Holy Hell Ck)
809/05	SPZ	1,131	Linear reserve (Timbarra R. Natural Features Zone) - 150-m buffer on both sides; extends into Kenny and Timbarra FMBs
809/06	SPZ	688	Linear reserve (Buchan R. Natural Features Zone); extends into Gillingal and Dawson FMBs
Basin			
810/01	SPZ	686	Herb-rich Forest
810/02	SPZ	68	Linear reserve (Murrindal R.); Australian Grayling; Riparian Forest; extends into Dawson and Statham FMBs
810/03	SMS	20	<i>Prasophyllum frenchii</i> ; Mt McLeod
810/04	SPZ	105	Linear reserve (Black Satin Ck)
810/05	SPZ	263	Linear reserve (Butchers Ck Natural Features Zone); extends into Tulloch Ard FMB
810/06	SPZ	198	Scenic values. Part of bushwalking and wildlife corridor linking Dawson Range & Snowy River National Park
810/07	SMZ	521	Black Satin Creek area. Landscape management restrictions on timber harvesting
810/08	SPZ	246	Scenic values. Part of bushwalking and wildlife corridor linking Dawson Range & Snowy River National Park
Gillingal			
811/01	SPZ	60	Linear reserve (Boggy Ck Natural Features Zone); extends into Timbarra FMB
811/02	SPZ	375	Spot-tail Quoll

Forest Block & site number	Zone	Area (ha)	Attributes
Dawson			
812/01	SPZ	2,830	Spot-tail Quoll; Powerful Owl; Sooty Owl; high densities of arboreal mammals; OG (Damp, Wet and Shrubby Dry Forest); ND (Damp Forest and Shrubby Dry Forest); <i>Beyeria viscosa</i> ; <i>Korthalsella rubra</i> ; <i>Beyeria lasiocarpa</i> ; RFSOS core area (28 Mt Dawson - Plum Gully - State); NE (Places Important for Succession; Natural Landscape; Aesthetic values)
812/02	SPZ	39	Linear reserve (Catle Gully Ck); link to Buchan River
812/03	SPZ	31	Linear reserve (Buchan River tributary); Yellow Box community (Herb Rich Forest - local observations)
812/04	SPZ	168	Linear reserve (Wagtail Ck)
812/05	SPZ	131	Linear reserve; high species richness for bats, reptiles and amphibian; includes ¹ SOS D
812/06	SPZ	29	Linear reserve (Blackfellows Ck); extends into Statham FMB
812/07	SPZ	39	Linear reserve; link to Buchan River and Plum Gully Flora Reserve
812/08	SPZ	82	Gum Top. High density of arboreal mammals; rich bird site; <i>Isolepis uskefeldiana</i> ; includes ¹ SOS B
812/09	SMZ	656	Wattle Gully. Landscape management restrictions on timber harvesting.
812/10	SPZ	457	Linear reserve (Murrindal River and adjacent land). Protection of landscape values.
Tulloch Ard			
813/01	SPZ	35	Wet Forest (<i>Eucalyptus regnans</i>); <i>Prostanthera walteri</i> ; Ash Saddle picnic area
813/02	SPZ	91	Old-growth forest characteristics (local observations); Dingo Hill 'regional reserve'
813/03	SPZ	193	Paterson's cutting. OG Herb Rich Forest (local observations)
813/04	SPZ	43	Linear reserve (Dingo Hill Spring Ck)
813/05	SPZ	101	Linear reserve (The Springs Ck)
813/06	SMZ	522	W-Tree Creek headwaters. Landscape management restrictions on timber harvesting
813/07	SPZ	210	Scenic values. Part of bushwalking and wildlife corridor linking Dawson Range & Snowy River National Park
Timbarra			
814/01	SPZ	1,667	OG (Wet and Damp Forest); Herb-rich Forest; part RFSOS core area (15 - Ah Chow Ck - regional)
814/02	SMS	20	<i>Correa laurenciana</i> var. <i>rosea</i>
814/03	SPZ	57	Linear reserve (Running Ck)
814/04	SPZ	78	Linear reserve (Ah Chow Ck)
814/05	SPZ	1,003	Sooty Owl; OG (Wet and Damp Forest); Herb-rich Forest; NE (Refuge Dependent EVCs; Places Important for Succession)
814/06	SPZ	22	Wet Forest (<i>Eucalyptus regnans</i>); Running Ck 'regional reserve'
814/07	SPZ	56	OG (Wet Forest); Glenmore 'regional reserve'
814/08	SMS	20	<i>Gingidia harveyana</i> ; Nunnett Plain
Mellick Munjie			
815/01	SPZ	107	Linear reserve (Eaglehawk Ck); RFSOS (31 Mellick-Munjie - Eaglehawk Ck - regional) core area
815/02	SPZ	269	Linear reserve (Mellick Munjie Ck Natural Features Zone); Part RFSOS (31 Mellick-Munjie - Eaglehawk Ck - regional)
815/03	SPZ	39	Messmate Stringybark forest (old-growth characteristics - local observations); Buckleys 'regional reserve'
Statham			
816/01	SPZ	446	Spot-tail Quoll
816/02	SPZ	113	Koalas
816/03	SPZ	108	Linear reserve (Jungle Ck)
816/04	SPZ	27	Linear reserve (link to Murrindal River)
816/05	SPZ	227	Linear reserve (Blackfellows Ck)
816/06	SPZ	286	Linear reserve (Buchan River Representative River)
816/07	SPZ	209	Linear reserve (Murrindal River)
816/08	SPZ	135	Powerful Owl; part RFSOS (30 Mt. Statham - regional)
816/09	SPZ	224	Powerful Owl
816/10	SPZ	12	Linear reserve
816/11	SMS	20	<i>Leucopogon microphyllus</i> var. <i>pilimbundus</i>
816/12	SPZ	366	Powerful Owl
816/13	SMS	20	<i>Leucopogon microphyllus</i> var. <i>pilimbundus</i>
Mundy's Plain			
817/01	SPZ	973	Old-growth characteristics (local observations); Wet Forest, Grassy Dry Forest, Montane Grassy Woodland and Heathy Dry Forest; extends into Statham FMB
817/02	SPZ	46	<i>Euphrasia scabra</i> ; Treeless Sub-alpine Complex
Seldom Seen			
818/01	SPZ	993	Old-growth characteristics (local observations); Spot-tail Quoll; <i>Dillwynia prostrata</i> ; Seldom Seen Ck
818/02	SMS	20	<i>Dillwynia prostrata</i>
Little River			
819/01	SMZ	92	<i>Dillwynia prostrata</i> ; <i>Discaria pubescens</i> ; <i>Pultenaea subspicata</i>

ORBOST FOREST DISTRICT

Forest Block & site number	Zone	Area (ha)	Attributes
Waygara			
823/01	SPZ	346	Masked Owl; OG (Shrubby Dry and Damp Forest); part RFSOS (36 Wombat Ck/Mottle Range - regional); adjoins Mottle Range Flora Reserve
823/02	SPZ	752	OG (Banksia Woodland and Shrubby Dry Forest); <i>Pomaderris discolor</i>
823/03	SPZ	115	Linear reserve
823/04	SPZ	26	Linear reserve (Wombat Ck)
823/05	SPZ	173	Linear reserve (Stony Ck)
823/06	SPZ	58	Part RFSOS (38 Lower Snowy - national); Extensive population of <i>Zieria smithii</i>
823/07	SMZ	20	RS 26 - eucalypt plantation trials
823/08	SMZ	63	RS 16 - wattle trial; RS 19 - long-term monitoring of dieback; RS 20 - planting and sowing trials on dieback sites
823/09	SMS	20	RS 19 - long-term monitoring of dieback
823/10	SPZ	163	Linear reserve (Simpson Ck)
823/11	SMS	20	<i>Pterostylis grandiflora</i>
823/12	SMS	20	<i>Beyeria lasiocarpa</i>
Bete Bolong			
824/01	SPZ	1,046	Grassy Dry Forest; Herb-rich Forest; Riparian Forest; <i>Beyeria lasiocarpa</i> ; RFSOS core area (35 Tara Range - regional)
824/02	SPZ	76	Linear reserve (follows ridge along Lower Tara Range Rd to Mottle Range Flora Reserve)
824/03	SPZ	161	Linear reserve (follows ridge along Tara Range Rd to Pheasant Ck)
Loongelaat			
825/01	SPZ	370	Koala; rich assemblage of native freshwater fish; Riparian Forest; OG (Rocky Outcrop Scrub & Shrubby Dry Forest)
825/02	SPZ	172	Pipe Clay Ck; <i>Marsdenia flavescens</i> ; <i>Beyeria lasiocarpa</i> ; <i>Sambucus australasica</i> ; <i>Adiantum formosum</i> ; Part RFSOS (38 Lower Snowy - national)
825/03	SPZ	1,339	Herb-rich Forest; OG Shrubby Dry Forest; ND Damp Forest
825/04	SPZ	90	Linear reserve (Rough Ck)
825/05	SPZ	84	Linear reserve (Loongelaat Ck north branch)
825/06	SPZ	398	Heritage River (lower Snowy River)
825/07	SPZ	79	RFSOS core area (43 Silvertop Hill - regional)
825/08	SPZ	2,119	Heritage River corridor (lower Snowy River); Part RFSOS (38 Lower Snowy - national)
825/09	SMZ	43	RS 26 - eucalypt plantation trials
Hartland			
826/01	SMZ	1,031	Sooty Owl; Masked Owl; Eastern Horseshoe-bat; Square-tailed Kite (nesting site); <i>Pterostylis grandiflora</i>
826/02	SPZ	128	Linear reserve (Simpson Ck) - 200-m buffer both sides of Ck; Large-footed Myotis; Common Bent-wing Bat; Sooty Owl; Eastern Horseshoe-bat; Limestone Box Forest
826/03	SPZ	101	Linear reserve (Dinner Ck); Limestone Box Forest
826/04	SMS	20	RS 10 - Red Ironbark establishment trial
826/05	SMZ	349	Large-footed Myotis; Common Bent-wing Bat; Sooty Owl; Turquoise Parrot; Limestone Box Forest; split by LR (826/02)
Curlip			
827/01	SMZ	173	<i>Cyathea cunninghamii</i> ; <i>Phebalium squameum</i> ssp. <i>coriaceum</i> (disjunct population); Part RFSOS (42 Mt Buck - State); NE (Biogeographic Range of Flora)
827/02	SPZ	233	OG Banksia Woodland; <i>Pomaderris discolor</i>
827/03	SPZ	198	OG Banksia Woodland; <i>Euchiton umbricolus</i> ; RS 19 Long term monitoring of dieback.
827/04	SPZ	152	Part RFSOS (42 Mt Buck - State); NE (Biogeographic Range of Flora)
827/05	SPZ	94	Linear reserve; Part RFSOS (42 Mt Buck - State); extends into Loongelaat FMB
827/06	SMZ	106	Long-footed Potoroo
827/07	SPZ	398	Linear reserve (Young's Ck & Stockyard Ck); NE (Historic site: Young's Ck weir; Aesthetic values: waterfall); <i>Plectorhiza tridentata</i> ; <i>Zieria smithii</i>
827/08	SPZ	99	Linear reserve (Jackson's Ck - Grass Tree Ck)
827/09	SPZ	57	Linear reserve (Dynamite Ck)
Raymond			
828/01	SMS	19	<i>Livistona australis</i>
828/02	SMS	20	<i>Livistona australis</i>
828/03	SPZ	65	OG Banksia Woodland; RFSOS core area (49 Cabbage Tree Ck - State)
828/04	SMS	16	RS 38 - Red Ironbark flowering study
828/05	SPZ	64	Linear reserve (Cabbage Tree Ck tributary)

Forest Block & site number	Zone	Area (ha)	Attributes
Murrungowar			
829/01	SMZ	216	Long-footed Potoroo; <i>Beyeria lasiocarpa</i> ; extends into Sardine
829/02	SPZ	49	Lowland Forest
829/03	SPZ	151	Linear reserve (Jack R.); rich assemblage of native freshwater fish; Riparian Forest
829/04	SPZ	313	OG Banksia Woodland
829/05	SPZ	147	RFSOS core area (52 Murrungowar - regional)
829/06	SMS	15	<i>Marsdenia flavescens</i> ; <i>Plectorrhiza tridentata</i>
829/07	SPZ	65	Linear reserve (Raymond Ck tributary)
829/08	SPZ	948	OG/ND (Damp Forest, Shrubby Dry Forest, Lowland Forest, Banksia Woodland, Riparian Scrub Complex); NE (Predicted high flora species richness)
829/09	SMZ	17	RS 21 - VAUS experimental coupe no. 375/05
829/10	SMZ	45	RS 21 - VAUS experimental coupe nos. 510/07 & 515/07
829/11	SMS	16	RS 8 - <i>E. sieberi</i> non-commercial thinning plots
829/12	SPZ	44	Linear reserve
829/13	SPZ	32	Linear reserve (Jack River tributary)
829/14	SPZ	197	Linear reserve (Rocky River); rich assemblage of native freshwater fish; Riparian Forest
829/15	SMZ	25	RS 21 - VAUS experimental coupe no. 510/08
829/16	SPZ	1,741	Linear reserve (Brodribb R. Natural Features Zone) - moving upstream, 200-m buffers apply as far as Sardine Ck, 150-m buffers between Sardine Ck and Big River, and 100-m buffers thereafter; Australian Grayling; Pouched Lamprey; Freshwater Blackfish; rich assemblage of native freshwater fish; Riparian Forest; <i>Pomadouris costata</i>
829/17	SMS	8	NE (Historic site: 17-mile tree)
829/18	SMZ	1,322	Rocky River Special Water Supply Catchment Area. Restrictions on timing of harvesting.
Kuark			
830/01	SPZ	43	Sooty Owl; part RFSOS (90 Glen Arte - State)
830/02	SMZ	412	Weibens Hill. Long-footed Potoroo.
830/03	SMZ	511	Long-footed Potoroo; Spot-tail Quoll
830/04	SPZ	27	Linear reserve (Arte River tributary)
830/05	SPZ	136	Linear reserve (Arte River tributary to Bald Mount); NE (Historic site: Timber workers huts, Glen Arte); huts next to road at south end of linear reserve; OG Wet Forest
830/06	SPZ	70	Linear reserve (Little Arte River); Riparian Forest
830/07	SPZ	92	Linear reserve (Little Arte River); CTR/WTR overlap
830/08	SPZ	162	OG (Wet Forest); part RFSOS (71 Mt Tanglefoot - regional); Mt Tanglefoot
830/09	SMZ	211	part RFSOS (90 Glen Arte - State); regrowth thinning permitted; old forest protected
830/10	SMS	18	RS 26 - eucalypt plantation trials
830/11	SMS	16	RS 26 - eucalypt plantation trials
830/12	SMS	10	RS 26 - eucalypt plantation trials
830/13	SMS	20	RS 26 - eucalypt plantation trials
830/14	SMS	10	RS 26 - eucalypt plantation trials
830/15	SPZ	233	Heritage River (Arte River) - 100 m buffer both sides.
830/16	SPZ	46	Linear reserve (Arte River headwaters)
830/17	SPZ	298	Heritage River (Goolengook River downstream from Arte R.) - 150 m buffer both sides.
Jirrah			
831/1	SMZ	566	Sooty Owl; <i>Plectorrhiza tridentata</i> ; RS 37 - effects of regrowth thinning on flora and fauna (II); RS 8 - <i>E. sieberi</i> non-commercial thinning plots; RS 36 - early age spacing trials
831/2	SPZ	42	Linear reserve (Dyer Ck)
831/3	SPZ	81	Linear reserve (Little Cabbage Tree Ck); Riparian Forest
831/4	SPZ	163	Linear reserve (Cabbage Tree Ck); Riparian Forest
831/5	SMZ	176	RS 32 - growth responses to thinning, fertilization and coppice control; part of RS 37 - implications of thinning eucalypt regrowth on flora and fauna (II) - extends into 832/04
831/6	SMS	19	RS 36 - early spacing trials
831/7	SMS	16	RS 36 - early spacing trials
Cabbage Tree			
832/01	SMS	19	RS 36 - early age spacing trials
832/02	SMZ	1,678	Sooty Owl; Spot-tail Quoll; Long-footed Potoroo (Fiat Tk); <i>Plectorrhiza tridentata</i> ; <i>Poa saxicola</i> ; NE (historic site - Close family allotment, Murrungowar); RS 34 - Long-footed Potoroo research areas
832/03	SPZ	190	Linear reserve (Cabbage Tree Ck); Freshwater Blackfish
832/04	SMZ	715	Sooty Owl Powerful Owl; part RS 37 - implications of regrowth thinning on flora and fauna (II) - extends into Jirrah FMB
832/05	SMZ	614	RS 1 - silvicultural systems project; RS 3 - CSIRO coppice study; <i>Olearia allenderae</i>
832/06	SMZ	28	RS 2 - CSIRO artificial wounding study; RS 3 - CSIRO coppice study; RS 19 - long-term monitoring of dieback;

Forest Block & site number	Zone	Area (ha)	Attributes
Purgagoofah			
833/01	SMZ	163	Long-footed Potoroo (continues into 832/02)
833/02	SMZ	410	Long-footed Potoroo; <i>Plectorrhiza tridentata</i>
833/03	SMZ	32	RS 9 - growth responses of <i>E. sieberi</i> to commercial thinning
833/04	SMS	20	Dingo Ck - <i>Ripogonum album</i>
833/05	SPZ	107	Sooty Owl; RFSOS core area (64 Mt. Billy McKenzie - regional)
833/06	SMZ	381	Long-footed Potoroo (Round Top)
833/07	SPZ	70	Linear reserve (McKenzie River); <i>Cyathea leichhardtiana</i>
833/08	SPZ	128	Linear reserve (Pheasant Ck); <i>Cyathea cunninghamii</i>
833/09	SMZ	215	Giant Burrowing Frog; RS 7 - <i>E. sieberi</i> early growth and mortality; RS 32 - growth responses to thinning, fertilization and coppice control; RS 33 - minor wounding study; RS 37 - effects of thinning eucalypt regrowth on flora and fauna
833/10	SMS	32	RS 7 - <i>E. sieberi</i> early growth and mortality
833/11	SMZ	388	Spot-tail Quoll; OG Shrubby Dry Forest
833/12	SMS	31	RS 7 - <i>E. sieberi</i> early growth and mortality
833/13	SPZ	110	NE (predicted high flora and fauna species richness)
West Bemm			
834/01	SMZ	601	Long-footed Potoroo; RS 37 - effects of thinning eucalypt regrowth on flora and fauna (II)
834/02	SMS	20	Confidential - see Flora and Fauna Co-ordinator; <i>Genoplesium pumilium</i>
834/03	SMS	20	Confidential - see Flora and Fauna Co-ordinator
834/04	SMS	20	Confidential - see Flora and Fauna Co-ordinator
834/05	SMZ	959	Powerful Owl; part RFSOS (62 Lower Bemm R. - State); split by 834/07
834/06	SPZ	477	Heritage River (Bemm River) - 200 m buffers both sides; Powerful Owl; part RFSOS (62 Lower Bemm R. - State; 63 Bemm R. - national)
834/07	SPZ	320	Linear reserve (Bell Bird Ck)
834/08	SMZ	2	Spot-tail Quoll; Long-footed Potoroo; extends into Cabbage Tree FMB
834/09	SMZ	503	Masked Owl; RS 37 - effects of regrowth thinning on flora and fauna (I and II)
834/10	SMZ	85	RS 5 and 37 - effects of regrowth thinning on flora and fauna (I and II)
834/11	SMZ	16	RS 26 - eucalypt plantation trials
834/12	SPZ	234	Wet Heath
Yeerung			
835/01	SMS	20	RS 3 - CSIRO coppice study; RS 17 - operational regeneration treatment of dieback sites
835/02	SMZ	286	Masked Owl; Sooty Owl; rich bird site
835/03	SMZ	964	Masked Owl; RS 2 - CSIRO artificial wounding study; RS 3 - CSIRO coppice study
835/04	SPZ	2,996	Masked Owl; Powerful Owl; Wet Heath; <i>Cryptostylis hunteriana</i> ; <i>Pomaderris discolor</i> ; <i>Stackhousia nuda</i> ; Links Cabbage Tree Ck Flora Reserve and Cape Conran-Sydenham Inlet Coastal Park
835/05	SPZ	244	Linear reserve (Yeerung River west branch)
Martins Creek			
836/01	SMZ	464	Long-footed Potoroo; Sooty Owl; <i>Viola caleyana</i>
836/02	SMZ	483	Long-footed Potoroo; part RFSOS core area (57 Martins Ck - national)
836/03	SMZ	252	Long-footed Potoroo; Riparian Forest
836/04	SPZ	365	Long-footed Potoroo; Powerful Owl; Spot-tail Quoll; NE (Natural Landscape)
836/05	SPZ	1,663	Powerful Owl; Sooty Owl; Spot-tail Quoll; high populations of Blue Mountains Tree-frog; rich arboreal mammal site; significant and rich fish populations; Foothill Box Ironbark Forest; OG (Damp Forest, Shrubby Dry Forest) RFSOS core area (57 Martins Ck - national); <i>Beyeria lasiocarpa</i> ; <i>Plectorrhiza tridentata</i> ; NE (Natural Landscape; Places important for succession)
836/06	SMZ	59	Powerful Owl; Long-footed Potoroo (site extends into 836/04)
836/07	SMZ	470	Herb Rich Forest; part of a strategic burning corridor.
836/08	SPZ	215	Inland example of Lowland Forest; <i>Eucalyptus agglomerata</i> at edge of range
836/09	SPZ	137	Linear reserve (Serpentine Ck); Confidential - see Flora and Fauna Co-ordinator
836/10	SPZ	195	Linear reserve (Dead Calf Ck)
836/11	SPZ	893	High arboreal mammals density; Foothill Box Ironbark Forest; part RFSOS core area (57 Martins Ck - national); NE (Natural Landscape); OG Shrubby Dry Forest
836/12	SPZ	298	Foothill Box Ironbark Forest; <i>Beyeria lasiocarpa</i> ; NE (Natural Landscape)
836/13	SPZ	503	Foothill Box Ironbark Forest; NE (Natural Landscape)
836/14	SPZ	508	Linear reserve (Little Yalmy River); Coventry's Skink; <i>Eucalyptus agglomerata</i> ; <i>Telopea oreades</i> (white flowered form)

Forest Block & site number	Zone	Area (ha)	Attributes
West Errinundra			
837/01	SMZ	320	Sooty Owl
837/02	SMS	17	RS 14 - <i>Eucalyptus nitens</i> provenance trials
837/03	SMZ	175	<i>Eucalyptus regnans</i> mixed forest; RFSOS (79 Sassafras Basin - State CTR); includes part ² SOS 8; detailed planning required to protect rainforest values and ensure best possible use of B+ sawlog resource
837/04	SPZ	98	Linear reserve (Errinundra River Natural Features Zone - west branch); high arboreal mammal density; <i>Oxalis magellanica</i> ; includes part of ² SOS 9
837/05	SPZ	66	<i>Eucalyptus delegatensis</i> mixed forest; includes ² SOS 7
837/06	SPZ	80	OG (Wet Forest); RFSOS (76 Kanuka Ck - State)
837/07	SPZ	21	OG (Wet Forest); includes part of ² SOS 9
Ada River			
838/01	SMZ	397	Spot-tail Quoll
838/02	SPZ	408	Herb Rich Forest; extends into West Errinundra FMB
838/03	SPZ	42	Linear reserve (Ada River tributary)
838/04	SPZ	148	Linear reserve (Ada River); OG (Wet Forest)
838/05	SPZ	41	Linear reserve (Pittosporum Ck); OG (Wet Forest)
Goolengook			
839/01	SPZ	1,222	Long-footed Potoroo; Sooty Owl; rich bird site; OG (Wet Forest and Damp Forest); <i>Cyathea cunninghamii</i> ; part RFSOS (72 Little Goolengook - national); includes part ³ SOS 4
839/02	SPZ	44	Linear reserve (Goolengook River tributary); <i>Cyathea cunninghamii</i> ; <i>Cyathea X marcescens</i> (3 records); RFSOS (73 Upper Goolengook - State); includes part ³ SOS 2
839/03	SMS	20	<i>Cyathea cunninghamii</i> ; <i>Cyathea X marcescens</i> ; part RFSOS (73 Upper Goolengook - State); includes part ³ SOS 2
839/04	SMZ	615	Powerful Owl; Sooty Owl; rich bird site; includes most of ³ SOS 6
839/05	SPZ	44	Lowland Sclerophyll Forest (northern edge of range); includes ³ SOS 3
839/06	SPZ	96	Linear reserve; RFSOS (72 Little Goolengook River - national); includes part ³ SOS 4
839/07	SPZ	259	Heritage River (Goolengook River upstream of Arte River) - 100 m buffers both sides
839/08	SPZ	67	Linear reserve; <i>Cyathea cunninghamii</i> ; includes part ³ SOS 2; Freddy Ck; no roading through linear reserve
Brodribb			
840/01	SMZ	247	Sooty Owl; Powerful Owl; Spot-tail Quoll; part RFSOS core area (60 Ellery Ck - regional)
840/02	SPZ	879	Giant Burrowing Frog; Blue Mountains Tree-frog; Herb-rich Forest; OG and ND (Damp Forest and Shrubby Dry Forest); NE (Natural Landscape); includes ⁴ SOS 1; extends into Ellery FMB
840/03	SMS	13	<i>Deyeuxia parviseta</i> var. <i>boommannii</i>
840/04	SPZ	183	Shrubby Dry Forest; includes part ⁴ SOS 2
840/05	SPZ	46	Linear reserve (Mountain Ck)
840/06	SPZ	36	Linear reserve (links Bonang River to Delegate River); includes part ⁴ SOS 3
840/07	SPZ	96	Linear reserve (Bonang River); OG Wet Forest; includes part ⁴ SOS 3
840/08	SMZ	568	Grassy Dry Forest; includes part ⁴ SOS 2
840/09	SPZ	74	Linear reserve (Ellery Ck); Orbost Spiny Crayfish
Ellery			
841/01	SPZ	944	Long-footed Potoroo; Masked Owl; Spot-tail Quoll; rich bird and mammal site; OG and ND (Damp Forest and Shrubby Dry Forest); <i>Pterostylis fischii</i> ; NE (Natural Landscape); RS 34 - Long-footed Potoroo; includes ⁵ SOS 1S and ⁶ SOS 1N; extends into Martins Ck FMB
841/02	SPZ	382	Damp Forest (vine-rich); OG and ND (Damp and Wet Forest); NE (Natural Landscape); includes part ⁵ SOS 2S
841/03	SMZ	130	Long-footed Potoroo (extends into Goolengook FMB)
841/04	SMZ	198	Long-footed Potoroo (extends into Goolengook FMB)
841/05	SPZ	501	Riparian Forest; OG (Wet Forest); includes ⁵ SOS 3S;
841/06	SPZ	139	Linear reserve (Ferntree Ck); Orbost Spiny Crayfish; includes part ⁶ SOS 1N
841/07	SPZ	242	Linear reserve (BA Ck)
841/08	SMZ	55	Long-footed Potoroo (Mt. Ellery. Most of site in Errinundra National Park)
Rich			
842/01	SMZ	877	Long-footed Potoroo; Spot-tail Quoll; <i>Desmodium varians</i> ; split by 842/07
842/02	SMS	20	<i>Dendrobium speciosum</i>
842/03	SMZ	456	Long-footed Potoroo
842/04	SMZ	90	Long-footed Potoroo; <i>Beyeria lasiocarpa</i>
842/05	SMS	20	<i>Desmodium varians</i>
842/06	SPZ	288	Linear reserve (Rich River); Riparian Forest; <i>Cyathea cunninghamii</i>
842/07	SPZ	317	Linear reserve (Big River and St. Patricks River to Bald Mount); extends into Kuark FMB

Forest Block & site number	Zone	Area (ha)	Attributes
842/08	SPZ	480	OG Rocky Outcrop Scrub; ND (Lowland Forest at edge of range and Damp Forest); NE (Refuge Dependent EVCs; Natural Landscape)
842/09	SPZ	36	Linear reserve (Rose Ck tributary)
842/10	SPZ	13	Long-footed Potoroo
842/11	SMZ	18	RS 21 - VAUS experimental coupe - 509/08
842/12	SMZ	28	RS 21 - VAUS experimental coupe - 509/06
842/13	SPZ	203	Linear reserve (Rich River east branch); Riparian Forest
842/14	SPZ	131	Linear reserve (Running Ck); Riparian Forest
842/15	SPZ	63	Linear reserve (Running Ck tributary); Riparian Forest
842/16	SPZ	84	Linear reserve (Rich River tributary)
842/17	SPZ	259	OG (Rocky Outcrop Scrub, Shrubby Dry Forest); <i>Beyeria lasiocarpa</i> ; NE (Refuge dependent EVC's)
842/18	SPZ	73	Linear reserve (Rich River tributary)
East Errinundra			
843/01	SMZ	228	Part RFSOS (81 East Errinundra - national); detailed planning required to protect rainforest values and ensure best possible use of B+ sawlog resource
843/02	SMZ	39	RS 21 - VAUS experimental coupe - 507/06
843/03	SMZ	24	RS 21 - VAUS experimental coupes - 507/07
843/04	SPZ	200	Heritage River (Errinundra River) - 100 m buffers both sides
843/05	SPZ	120	Powerful Owl; OG Wet Forest; part RFSOS (81 East Errinundra - national)
Sardine			
844/01	SMZ	461	Long-footed Potoroo; RS 21 - VAUS experimental coupe nos. - 513/02, 513/04, 513/06.
844/02	SPZ	1,922	Long-footed Potoroo; Sooty Owl; Spot-tail Quoll; high density of Yellow-bellied Gliders and Greater Gliders; rich bird site; high bat densities; <i>Beyeria viscosa</i> ; OG (Shrubby Dry Forest, Rocky Outcrop Scrub and Damp Forest); RFSOS core area (55 Sardine - Paradise Ridge - regional); includes ⁷ SOS 10 and most of ⁷ SOS 8
844/03	SMZ	117	Long-footed Potoroo; Blue Mountains Tree Frog; rich bird site; <i>Beyeria viscosa</i>
844/04	SPZ	42	Linear reserve
844/05	SPZ	488	Powerful Owl; breeding Blue Mountains Tree Frog; Spot-tail Quoll; Riparian Forest; split by 844/07; includes ⁷ SOS 1 and part ⁷ SOS 2
844/06	SMZ	276	Long-footed Potoroo
844/07	SPZ	222	Linear reserve (Serpentine Ck); <i>Pterostylis cucullata</i> ; includes ⁷ SOS 4
844/08	SPZ	43	Linear reserve (follows ridge); 'boxironbark' forest; includes part ⁷ SOS 5 and ⁷ SOS 7
844/09	SPZ	77	Linear reserve (Brown Paper Ck)
844/10	SPZ	165	Rich and high density bats; rich bird site; Eastern Broad-nosed Bat; Basaltic Damp Forest; RFSOS core area (56 Riddle Ck - regional); extends into Martins Creek FMB
844/11	SPZ	156	Linear reserve (Sardine Ck); rich bird site; high arboreal mammal richness; rich assemblage of native freshwater fish
844/12	SPZ	24	Rich bird site
844/13	SPZ	121	Linear reserve (Grasstree Ck)
844/14	SPZ	130	Blue Mountains Tree Frog; RFSOS core area (54 Mt. Pinnak - regional); includes part ⁷ SOS 12
Tabby			
845/01	SPZ	614	Spot-tail Quoll; Clay Heathland; OG Shrubby Dry Forest; <i>Beyeria viscosa</i> ; NE (Natural Landscape)
845/02	SPZ	118	Inland example of Lowland Forest
845/03	SPZ	182	Linear reserve (Raymond Ck); Riparian Forest
845/04	SMZ	120	Long-footed Potoroo
845/05	SMS	20	<i>Pomaderris costata</i>
Yalmy			
846/01	SPZ	719	Powerful Owl; Masked Owl; Spot-tail Quoll; <i>Prosthanthera walteri</i> ; NE (Natural Landscape); includes ⁸ SOS 1 and includes part ⁸ SOS 13
846/02	SPZ	628	Long-footed Potoroo; Sooty Owl; OG (Wet Forest)
846/03	SMS	20	<i>Pomaderris discolor</i>
846/04	SMZ	199	Long-footed Potoroo
846/05	SPZ	546	Linear reserve (Yalmy River); Blue Mountains Tree Frog; Riparian Forest; <i>Pomaderris discolor</i>
846/06	SPZ	16	Linear reserve; includes ⁸ SOS 7
846/07	SPZ	87	Linear reserve (Walsh Ck)
846/08	SPZ	35	High density of arboreal mammals; rich bird site; includes ⁸ SOS 8
846/09	SMZ	420	Long-footed Potoroo; Sooty Owl; includes part ⁸ SOS 12
846/10	SMS	19	<i>Pomaderris discolor</i>

CANN RIVER FOREST DISTRICT

Forest Block & site number	Zone	Area (ha)	Attributes
Binns			
848/01	SPZ	1,625	Powerful Owl; Sooty Owl; Spotted Galaxias; Striped Gudgeon; <i>Cyathia leichhardtiana</i> ; <i>Sticherus flabellatus</i> ; <i>Scutellaria mollis</i> ; <i>Ripogonum album</i> ; <i>Pittosporum revolutum</i> ; <i>Ozothamnus argophyllos</i> ; <i>Plectorrhiza tridentata</i> ; RFSOS (113 Royal Ck - State); NE (Biogeographic Range of Flora)
848/02	SPZ	21	Linear reserve (Wallagaraugh River tributary)
Wallagaraugh			
849/01	SPZ	144	Linear reserve (links to Maramingo Flora Reserve); OG Banksia Woodland
849/02	SPZ	133	Linear reserve (Stony Ck); OG Riparian Forest; <i>Scutellaria mollis</i>
849/03	SPZ	48	Grassy Dry Forest
849/04	SPZ	49	OG Banksia Woodland; <i>Lepyrodia anarthria</i>
849/05	SPZ	137	Linear reserve (Wallagaraugh River Natural Feature Zone); Cox's Gudgeon; Large-footed Myotis
Genoa			
850/01	SMS	11	<i>Scutellaria mollis</i>
Betka			
852/01	SMS	6	<i>Notothixos subaureus</i>
852/02	SPZ	64	Linear reserve (Betka River); Estuarine Wetland
852/03	SMS	19	<i>Pomaderris discolor</i>
Stony Peak			
853/01	SMZ	267	Powerful Owl; includes part ² SOS 2
853/02	SPZ	362	Powerful Owl; NE (Places Important for Succession)
853/03	SPZ	343	Linear reserve (Hard to Seek Ck); <i>Calorophus elongatus</i> ; <i>Sticherus flabellatus</i> ; includes part ² SOS 2
853/04	SPZ	357	OG Lowland Forest
853/05	SPZ	198	Linear reserve; Part ² SOS 2
853/06	SMS	20	RS 19 - long-term monitoring of dieback
853/07	SMZ	351	Powerful Owl; includes part ² SOS 2
853/08	SMS	20	<i>Leptorhynchus elongatus</i> ; <i>Hibbertia rufa</i> ; <i>Goodenia bellidifolia</i>
853/09	SMS	38	<i>Burnettia cuneata</i> ; <i>Goodenia bellidifolia</i>
853/10	SMS	20	<i>Dendrobium speciosum</i>
853/11	SMS	20	<i>Lepyrodia anarthria</i>
853/12	SMS	55	Confidential - see Flora and Fauna Co-ordinator
853/13	SPZ	563	Linear reserve (Betka River Natural Features Zone) - 150-m buffers both sides; extends into Betka FMB
853/14	SMZ	5,245	Betka River Special Water Supply Catchment Area. Restrictions on timing of harvesting.
East Wingan			
854/01	SPZ	965	Powerful Owl; Sooty Owl; high density of Blue Mountains Tree Frogs; Broad-finned Galaxias; ND (Lowland Forest and Riparian Scrub Complex); <i>Lepyrodia anarthria</i> ; extends into Stony Peak FMB
854/02	SPZ	88	Masked Owl; high number of orchids including <i>Pterostylis baptistii</i> , <i>Cryptostylis hunteriana</i> , <i>C. erecta</i> , <i>Burnettia cuneata</i> , <i>Genoplesium pumilum</i> and <i>Prasophyllum parviflorum</i> ; <i>Lepyrodia anarthria</i> ; <i>Hibbertia rufa</i>
854/03	SPZ	175	Blue Mountains Tree Frog; Broad-finned Galaxias
854/04	SPZ	1,489	Linear reserve (Wingan River Natural Features Zone) - minimum buffer of 150 m both sides, larger on flats (as mapped); extends into Benedore, Surprise, West Wingan and Buckland FMBs
854/05	SMS	20	<i>Cryptostylis hunteriana</i> ; <i>Genoplesium pumilum</i> ; <i>Pterostylis pedaglossa</i>
854/06	SMS	12	<i>Lepyrodia anarthria</i> ; <i>Hibbertia rufa</i>
854/07	SMZ	785	Wet Heath; (Betka Swamp); Part of Betka River Special Water Supply Catchment Area. Restrictions on timing of harvesting (extends into Stony Peak FMB)
Benedore			
855/01	SMS	20	<i>Olearia allendenae</i>
855/02	SMS	20	<i>Dendrobium speciosum</i>
855/03	SMS	20	<i>Almaleea paludosa</i>
West Wingan			
858/01	SPZ	203	Linear reserve (Kanuka Ck)
858/02	SPZ	448	NE (predicted high flora and fauna richness); Wet Heath; Riparian Forest
858/03	SPZ	204	Masked Owl
858/04	SMS	20	RS 19 - long-term monitoring of dieback
858/05	SMS	20	RS 20 - planting and sowing trials on dieback sites
858/06	SPZ	213	ND (Lowland Forest); link to Alfred National Park

Forest Block & site number	Zone	Area (ha)	Attributes
Everard			
860/01	SPZ	58	Linear reserve; Riparian Forest; <i>Cyathea leichhardtiana</i>
860/02	SMS	20	RS 31 - CSIRO/CNR early spacing trials
860/03	SPZ	513	NE (predicted high flora and fauna species richness); Heath complex; links to Alfred NP
860/04	SPZ	400	NE (predicted high flora and fauna species richness); heath complex
860/05	SPZ	344	Linear reserve (Mueller River Natural Feature Zone) - 150-m buffers both sides
860/06	SPZ	1,911	Linear reserve (Thurra River Natural Feature Zone and Representative River) - 150-m buffers both sides (wider on flats - as mapped); Australian Grayling; Australian Bass; rich assemblage of native freshwater fish; extends into Thurra, Drummer and Coaggalah FMBs
860/07	SPZ	791	Wet Heath(Bluey Ck Swamp)
Clinton			
861/01	SMS	20	<i>Calorophus elongatus</i>
861/02	SMS	13	<i>Olearia allendeneae</i>
861/03	SMS	20	<i>Olex stricta</i>
861/04	SMS	20	<i>Calorophus elongatus</i>
Thurra			
862/01	SPZ	899	Heath complex
862/02	SPZ	979	Masked Owl; heath complex; ND Lowland Forest; <i>Cryptostylis hunteriana</i> ; NE (predicted high fauna species richness); extends into Tamboon FMB
862/03	SPZ	79	Linear reserve
862/04	SMS	10	<i>Olex stricta</i>
Tamboon			
863/01	SMZ	702	Sooty Owl; Masked Owl; Pouched Lamprey; <i>Olex stricta</i>
863/02	SMZ	420	Masked Owl; Wet Heath; Riparian Forest
863/03	SMZ	668	Masked Owl; Blue Mountains Tree Frog; high density of arboreal mammals; Riparian Forest/Riparian Scrub complex; RS 26 - eucalypt plantation trials
863/04	SPZ	753	Powerful Owl; Riparian Scrub complex
863/05	SPZ	338	Linear reserve (Reedy Ck); Pouched Lamprey; rich assemblage of native freshwater fish; Riparian Forest; <i>Bosiacea riparia</i> ; <i>Plectorhiza tridentata</i> ; <i>Callistemon subulatus</i>
863/06	SMS	14	<i>Cryptostylis hunteriana</i>
863/07	SMS	18	<i>Dipodium variegatum</i>
863/08	SMS	20	<i>Calorophus elongatus</i>
863/09	SMS	20	<i>Olex stricta</i>
863/10	SPZ	779	Linear reserve (Cann River Natural Features Zone) - 200-m minimum buffer both sides; Cox's Gudgeon; Australian Grayling; Striped Gudgeon; Broad-finned Galaxias; Mountain Galaxias; Large-footed Myotis
863/11	SPZ	92	High density mammal site
Tonghi			
864/01	SPZ	1,418	OG Banksia Woodland; ND Lowland Forest; NE (Natural Landscape; Place Important for Succession)
864/02	SPZ	482	Damp Forest; RFSOS core areas (87 Serpentine Ck - State); Rare butterfly site (Donald's Knob)
864/03	SPZ	125	Linear reserve (Tonghi Ck)
864/04	SPZ	37	Linear reserve
Little River Swamp			
866/01	SPZ	54	Linear reserve (Mountain Ck)
866/02	SPZ	403	Part RFSOS core area (62 Lower Bemm - State)
866/03	SMS	20	<i>Genoplesium pumilum</i>
866/04	SPZ	81	Linear reserve (Little River); Sooty Owl; <i>Ripogonum album</i>
866/05	SPZ	66	Linear reserve (connects Little River and Bemm River)
866/06	SPZ	605	Heritage River (Bemm River) - 200 m buffers both side. Part RFSOS core area (62 Lower Bemm - State)
866/07	SPZ	188	NE (predicted high flora and fauna species richness); adjoins Georges Plain Flora Reserve
866/08	SPZ	427	Masked Owl; Wet Heath
866/09	SPZ	178	Linear reserve (Little River) - 200-m buffer on both sides of Little River through Blue Gum Flat; Sooty Owl; <i>Ripogonum album</i>
866/10	SPZ	71	Linear reserve (Little River)
Dinah			
867/01	SPZ	649	Powerful Owl; RFSOS core areas (63 Bemm River - national)
867/02	SPZ	149	Linear reserve (Poddy Ck to Dinah Ck)
867/03	SPZ	249	Linear reserve (Dinah Ck tributary to Little River)
867/04	SPZ	276	Damp Forest; part RFSOS (63 Bemm River - national); link to Lind NP
867/05	SMS	20	Bat Cave (Goldmine Tk)

Forest Block & site number	Zone	Area (ha)	Attributes
Lind			
868/01	SPZ	192	Linear reserve (Little Pyramid Ck)
868/02	SMS	19	RS 19 - long-term monitoring of dieback
868/03	SMS	20	<i>Commersonia fraseri</i>
868/04		118	Heritage River (Bemm River) - 150 m buffers both side.
Nixon			
869/01	SPZ	133	Sooty Owl; OG (Shrubby Dry Forest, Damp Forest); RFSOS (74 Blackwatch Tk. - regional)
869/02	SPZ	40	Linear reserve
Pyramid			
870/01	SPZ	106	Linear reserve (Combienbar River tributary to Old Combienbar Rd)
870/02	SPZ	185	Heritage River (Bemm River) - 150 m buffers both side.
870/03		184	Linear reserve (Combienbar River Natural Features Zone); rich assemblage of native freshwater fish
Upper Tonghi			
871/01	SPZ	243	Linear reserve (Tonghi Ck); High bird diversity; <i>Bosmina riparia</i> ; includes part ¹⁰ SOS 3
871/02	SPZ	123	Linear reserve (Tonghi Swamp Ck)
871/03	SPZ	86	RFSOS core area (90 Pyramid Ck-Tonghi Swamp - national); NE (predicted high flora species richness)
871/04	SPZ	164	RFSOS core area (91 Tonghi Jungle-Waldron Mountain - State)
871/05	SPZ	57	Linear reserve (Minor Ck)
871/06	SPZ	46	Linear reserve (Upper Tonghi Ck west)
Noorinbee			
872/01	SMZ	785	Powerful Owl
872/02	SMS	19	Rare butterfly site; Mt Noorinbee
872/03	SPZ	67	Linear reserve (Jim Walker Ck)
872/04	SPZ	166	Linear reserve (Reed Bed Ck); Riparian Forest; includes part ¹⁰ SOS 2
872/05	SMS	20	<i>Zieria smithii</i>
872/06	SMS	20	<i>Scutellaria mollis</i>
872/07	SPZ	135	Linear reserve (Reed Bed Ck-Tonghi Ck tributary); includes part ¹⁰ SOS 2
872/08	SPZ	130	RFSOS (94 Jim Walker Ck - regional); includes ¹⁰ SOS 1
872/09	SPZ	66	Eastern Broad-nosed Bat
Reedy			
873/01	SPZ	1,285	Powerful Owl; Sooty Owl; NE (predicted high flora and fauna species richness)
873/02	SMZ	302	Riparian Forest; Herb-rich Forest; RS 11 - Grey Box growth study
873/03	SMZ	403	Grassy Dry Forest; Herb-rich Forest
873/04	SPZ	276	Linear reserve (Reedy Ck)
873/05	SMZ	109	RS 15 - PDA
873/06	SMZ	79	RS 15 - PDA
873/07	SMS	19	RS 19 - Long-term monitoring of dieback
Drummer			
874/01	SPZ	373	Sooty Owl; Spot-tail Quoll; Blue Mountain Tree Frog; OG Banksia Woodland; ND Lowland Forest; <i>Sarcophilus falcatus</i> ; <i>Plectorhiza tridentata</i> ; part RFSOS: 100 - Thurra Crossing (regional); site on both sides of linear reserve
874/02	SPZ	302	Blue Mountain Tree Frog; OG Banksia Woodland; Riparian Scrub complex
874/03	SPZ	257	Linear reserve (Drummer Ck)
874/04	SMS	20	<i>Cyathea cunninghamii</i>
874/05	SPZ	329	Powerful Owl; Spot-tail Quoll; Blue Mountains Tree Frog; Glossy Grass Skink
874/06	SPZ	117	Linear reserve; Riparian Forest; <i>Poa</i> sp. aff. <i>tenera</i> (hairy form)
874/07	SPZ	28	Lowland Sclerophyll Forest (1939 fire regrowth)
874/08	SPZ	128	Linear reserve (Drummer Ck tributary)
Cooagalah			
875/01	SPZ	59	Lowland Forest (edge of range); includes ¹¹ SOS 8
875/02	SPZ	513	Sooty Owl; Riparian Forest; Part RFSOS (105 East Thurra - State)
875/03	SPZ	25	Linear reserve; Riparian Forest
875/04	SPZ	90	Linear reserve; OG Riparian Forest
875/05	SPZ	51	Linear reserve; Riparian Forest
875/06	SPZ	546	Powerful Owl; Riparian Forest; OG and ND (Lowland Forest and Damp Forest); includes ¹¹ SOS 6

Forest Block & site number	Zone	Area (ha)	Attributes
Buckland			
876/01	SPZ	97	Sooty Owl; RFSOS (110 Upper Wingan - regional); split by linear reserve
876/02	SMZ	441	Sooty Owl
876/03	SPZ	293	Powerful Owl; high arboreal mammal density; <i>Cyathea cunninghamii</i> ; RFSOS core area (103 Mt Future - regional); includes ¹² SOS 2
876/04	SPZ	366	Masked Owl; rich bird site; Lowland Forest at inland edge of range; <i>Hibbertia nufa</i> ; includes part ¹² SOS1
876/05	SMZ	441	Rich bird site; Square-tailed Kite; <i>Hibbertia nufa</i> ; <i>Leptorhynchus elongatus</i> ; <i>Goodenia bellidifolia</i> ; RS 19 - long-term monitoring of dieback; includes part of ¹² SOS 1
876/06	SPZ	337	Sooty Owl; high arboreal mammal density; RFSOS 109 - Scrubby Ck (regional); includes ¹² SOS 3; Scrubby Ck
876/07	SPZ	110	Riparian Forest
876/08	SPZ	134	Linear reserve (Scrubby Ck to Alfred National Park)
876/09	SPZ	41	Linear reserve (Yoke Up Ck tributary)
876/10	SPZ	263	Heathland/Riparian scrub (Karlo Ck); <i>Hibbertia nufa</i> ; <i>Cryptostylis erecta</i> ; <i>C. hunteriana</i> ; <i>Prasophyllum parviflorum</i> ; <i>Pterostylis baptistii</i> ; <i>Stackbousia nuda</i> ; <i>Pterostylis pedaglossa</i>
876/11	SPZ	69	Linear reserve (Wingan River to Coopracambra National Park)
876/12	SMS	20	<i>Prasophyllum lindleyanum</i>
876/13	SPZ	174	Linear reserve (Yoke Up Ck Natural Feature Zone)
Jones			
877/01	SPZ	1,236	Masked Owl; She-oak Skink; Peaceful Dove; Clay Heathland; Herb-rich Forest; OG Riparian Forest; RS 19 - long term monitoring of dieback
877/02	SMZ	546	Herb-rich Forest; Grassy Dry Forest; <i>Adiantum formosum</i> ; <i>Hibbertia nufa</i> ; <i>Leptorhynchus elongatus</i> ; <i>Lepydodia anarthria</i> ; <i>Dendrobium speciosum</i> ; No timber harvesting - SMZ status due to fire protection priority.
877/03	SPZ	573	Diamond Python; <i>Hibbertia nufa</i> ; NE (predicted high flora and fauna species richness)
877/04	SPZ	357	Linear reserve (Genoa River Natural Feature Zone); Cox's Gudgeon; Australian Bass; NE (Aesthetic values)
Maramingo			
878/01	SMZ	630	Masked Owl; Sooty Owl; OG Riparian Forest; extensive stands of <i>Allocasuarina littoralis</i> ; <i>Leyrodia anarthria</i> ; <i>Zieria smithii</i> ; <i>Goodenia bellidifolia</i>
878/02	SPZ	731	Sooty Owl; Powerful Owl; <i>Plectorrhiza tridentata</i> ; <i>Dendrobium striolatum</i> ; <i>Callistemon subulatus</i> ; <i>Zieria smithii</i> ; <i>Leptospermum emarginatum</i>
878/03	SMS	14	<i>Pomaderris discolor</i>
878/04	SMZ	398	Powerful Owl; <i>Scutellaria mollis</i>
878/05	SMZ	320	Masked Owl; Powerful Owl; <i>Scutellaria mollis</i> ; <i>Plectorrhiza tridentata</i>
878/06	SPZ	159	Broad-finned Galaxias; Dry Rainforest; <i>Alectryon subcinereus</i> ; <i>Callistemon subulatus</i> ; <i>Pseudanthus divaricatus</i> ; <i>Scutellaria mollis</i> ; <i>Zieria smithii</i> ; <i>Beyeria lasiocarpa</i> ; part RFSOS (114 Genoa - national)
878/07	SPZ	84	Linear reserve (Maramingo Ck); Striped Gudgeon; Dwarf Flathead Gudgeon; rich assemblage of native freshwater fish; <i>Zieria smithii</i> ; <i>Plectorrhiza tridentata</i>
878/08	SPZ	107	Linear reserve (Sandy Waterholes Ck tributary); Masked Owl; <i>Leptorhynchus elongatus</i> ; <i>Plectorrhiza tridentata</i> ; <i>Zieria smithii</i>
878/09	SPZ	207	Linear reserve (Sandy Waterholes Ck tributary); <i>Dendrobium striolatum</i>
878/10	SPZ	136	Linear reserve (Big Flat Ck); Masked Owl; Powerful Owl; Broad-finned Galaxias; <i>Callistemon subulatus</i> ; <i>Plectorrhiza tridentata</i> ; <i>Zieria smithii</i> ; <i>Scutellaria mollis</i> ; <i>Poa</i> sp. aff. <i>tenera</i> (hairy)
878/11	SPZ	603	High density Blue Mountains Tree Frogs; Spot-tail Quoll; rare butterfly habitat (Maramingo Hill); Herb-rich Forest
878/12	SMZ	297	Glossy Black Cockatoo
878/13	SMZ	155	RS 15 - pulpwood demonstration area
878/14	SMZ	453	Significant fish habitat; 100-m buffers on all streams; no roading across streams
878/15	SPZ	100	Gippsland Grey Box woodland
878/16	SMS	26	<i>Dipodium variegatum</i> ; <i>Ozothamnus argophyllus</i>
878/17	SMS	20	<i>Callistemon subulatus</i>
Wroxham			
879/01	SMS	20	<i>Scutellaria mollis</i> ; <i>Callistemon subulatus</i>
Kaye			
882/01	SPZ	152	Herb-rich Forest; Banksia Woodland
882/02	SPZ	156	Linear reserve (Bridge Ck tributary)
Weeragua			
883/01	SMZ	520	Spot-tail Quoll
883/02	SPZ	832	Blue Mountains Tree Frog; Heathy Dry Forest (including OG)
883/03	SPZ	85	Linear reserve (upper Cann River); Riparian Forest
883/04	SPZ	397	OG (Shrubby Dry and Lowland Forest)
883/05	SPZ	90	Linear reserve; Riparian Forest

Forest Block & site number	Zone	Area (ha)	Attributes
Lockup			
884/01	SMZ	421	Powerful Owl
884/02	SMZ	426	Sooty Owl; <i>Beyeria viscosa</i>
884/03	SPZ	241	Linear reserve (Waratah Ck)
884/04	SPZ	216	Linear reserve (Lockup Ck); Sooty Owl; <i>Beyeria viscosa</i>
884/05	SPZ	90	Linear reserve (Cann Swamp Ck);
884/06	SMS	20	Rare butterfly habitat (Waldron Mountain)
884/07	SMS	20	<i>Beyeria viscosa</i>
884/08	SMS	20	<i>Beyeria viscosa</i>
Cobon			
885/01	SPZ	362	OG & ND Wet Forest; CTR/WTR overlap; RFSOS core area (83 Bungwar Ck - State); NE (Refuge Dependent EVCs; Place Important for Succession)
885/02	SPZ	184	OG (Wet Forest)
885/03	SPZ	839	Linear reserve (Hensleigh Ck) - 200-m buffers on both sides of creek and tributaries; OG (Wet Forest)
885/04	SPZ	209	Linear reserve (Bungwar Ck); <i>Cyathea cunninghamii</i>
885/05	SMZ	85	RS 21 - VAUS experimental coupe - 512/08
885/06	SMZ	47	RS 21 - VAUS experimental coupe - 513/06
885/07	SMZ	26	RS 21 - VAUS experimental coupe - 513/04
885/08	SMZ	34	RS 21 - VAUS experimental coupe - 513/03
885/09	SPZ	68	Linear reserve (Combienbar River tributary)
Quadra			
886/01	SMZ	198	Sooty Owl; RFSOS core area (85 Hensleigh Quadra - State)
886/02	SPZ	199	Linear reserve (Lockup Ck to Ino Ck)
886/03	SPZ	213	Linear reserve (Bulda River)
886/04	SPZ	72	Linear reserve (Lockup Ck west branch)
Sisters			
887/01	SPZ	900	Peregrine Falcon; high arboreal mammal density; Shrubby Dry Forest; OG and ND (Damp Forest and Shrubby Dry Forest); <i>Leucopogon microphyllus</i> var. <i>pilibundus</i> ; <i>Eriostemon virgatus</i> ; RFSOS core area (86 Three Sisters - State); includes ¹³ SOS 1
887/02	SPZ	107	Linear reserve (Combienbar River); high densities of Common Bent-wing Bat
887/03	SPZ	266	Linear reserve (Cann River); Riparian Forest; includes ¹³ SOS 2
887/04	SPZ	58	Linear reserve (Bulda River)
Bulda			
888/01	SPZ	89	High arboreal mammal density; includes ¹⁴ SOS 1
888/02	SPZ	347	Rich herpetofauna site; rich bird site; high orchid species richness; includes ¹⁴ SOS 4
888/03	SPZ	51	Giant Burrowing Frog
888/04	SPZ	98	Linear reserve (Fiddlers Green Ck); Riparian Forest
888/05	SPZ	139	Linear reserve (Fiddlers Green Ck and Bulda Ck tributaries); <i>Beyeria viscosa</i> ; includes part ¹⁴ SOS 2
888/06	SPZ	147	Linear reserve (Bulda Ck); <i>Beyeria viscosa</i>
888/07	SPZ	728	Grassy Dry Forest; includes ¹⁴ SOS 7
Tennyson			
889/01	SPZ	422	Powerful Owl; Sooty Owl; high densities of Greater Gliders; Yellow-bellied Shearwater Bat; OG Damp Forest; ND (Damp Forest and Shrubby Dry Forest); NE (Natural Landscape; Places Important for Succession); includes ¹⁵ SOS 1; adjoins Tennyson Ck Flora Reserve in N.S.W.
889/02	SPZ	896	Powerful Owl; ND Riparian Forest; <i>Beyeria viscosa</i> ; NE (Places Important for Succession)
889/03	SMZ	28	Linear reserve (tributary of Bulda Ck)
889/04	SPZ	98	Linear Reserve (Sunday Ck); Southern Barred Frog; includes part ¹⁵ SOS 2
889/05	SPZ	66	Linear reserve (upper Tennyson Ck); includes ¹⁵ SOS 4
889/06	SPZ	161	Linear reserve (Bulda River)
889/07	SPZ	75	Linear reserve (lower Tennyson Ck)
889/08	SPZ	183	OG (Wet and Damp Forest)

BENDOC FOREST DISTRICT

Forest Block & site number	Zone	Area (ha)	Attributes
Delegate			
890/01	SMZ	427	Powerful Owl; Sooty Owl; rich arboreal mammals; includes ² SOS 1
890/02	SPZ	95	Powerful Owl; rich arboreal mammals; Damp Forest; Montane Dry Woodland; includes ² SOS 2
890/03	SPZ	71	Montane Dry Woodland; Treeless sub-alpine complex <i>Euphrasia scabra</i> ; <i>Juncus</i> sp. (l) sensu. L. Johnson: <i>Viola caleynana</i>
890/04	SPZ	36	Linear reserve (Tea Tree Swamp) - 100-m buffer each side of swamp community; new crossing of Delegate River (main branch) or upgrade of Fanny Moo Tk to be avoided; includes part ² SOS 4
890/05	SPZ	36	Linear reserve (Tea Tree Swamp) - 100-m buffer each side of swamp community
890/06	SPZ	306	OG Tablelands Damp Forest; includes ² SOS 10
890/07	SMZ	169	NE (Historic Site: Hungerfords Farm)
890/08	SPZ	145	Sub-alpine Treeless Complex; Sub-alpine Woodland; Montane Dry Woodland; includes ² SOS 2 and part ² SOS 4
890/09	SMS	7	<i>Gahnia subaequalis</i> ; <i>Thelymitra circumsepta</i> ; <i>Pultenaea capitellata</i>
890/10	SPZ	60	Powerful Owl; Sooty Owl; OG (Montane Dry Woodland)
Goongerah			
891/01	SMZ	477	Spot-tail Quoll; rich bird site
891/02	SPZ	32	Linear reserve (Jungle Ck); Orbost Spiny Crayfish
891/03	SPZ	251	Linear reserve (Mt Jersey Rd) - 100-m buffer on both sides of road
891/04	SPZ	122	OG Shrubby Dry Forest; <i>Hakea macraeana</i> ; <i>Pomaderris costata</i> ; <i>Pomaderris virgata</i>
891/05	SPZ	198	Grassy Dry Forest
891/06	SPZ	439	Grassy Dry Forest; Orbost Spiny Crayfish (Lilly Pilly Ck)
891/07	SPZ	39	OG Shrubby Dry Forest; <i>Pomaderris costata</i> ; <i>P. virgata</i>
891/08	SPZ	423	Linear reserve (Goongerah Ck and Stony Ck); <i>Pomaderris costata</i>
891/09	SMS	20	<i>Prostanthera walteri</i>
891/10	SPZ	27	Rich bird site
Queensborough			
892/01	SPZ	535	Powerful Owl; Montane Dry Woodland; Montane Riparian Woodland
892/02	SPZ	247	Powerful Owl; Sooty Owl; Montane Dry Woodland
892/03	SPZ	165	Linear reserve (follows north side of road to link Lock Ck with Trapyard Ck); Tablelands Damp Forest
892/04	SPZ	124	Linear reserve (Back Ck); Montane Riparian Woodland
892/05	SPZ	154	Linear reserve (Queensborough River); OG (Wet Forest); most of linear reserve follows OG forest boundary
892/06	SPZ	112	Linear reserve (Bendoc River)
892/07	SPZ	82	OG Tablelands Damp Forest; NE (Historic site: Clarkeville gold-mining settlement)
892/08	SPZ	200	OG Montane Dry Woodland
892/09	SPZ	79	Linear reserve (Little River)
892/10	SMS	20	NE (Historic site: Wilsons Hut)
892/11	SPZ	37	Linear reserve (Yandown Ck.); Orbost Spiny Crayfish
892/12	SPZ	137	Linear reserve (Robert Camp Ck, Black Ck and Queensborough River); OG (Wet Forest); Orbost Spiny Crayfish
892/13	SPZ	465	OG Tablelands Damp Forest; NE (Refuge dependent EVC; predicted high fauna species richness)
892/14	SPZ	106	OG (Wet Forest)
Bonang			
893/01	SMZ	47	RS 26 - eucalypt plantation trials
893/02	SPZ	983	Shrubby Dry Forest; OG (Montane Dry, Damp and Wet Forest)
893/03	SPZ	73	Linear reserve (Delegate River); Treeless sub-alpine complex; Montane Riparian Swamp; NE (Historic site: Delegate River Tunnel)
893/04	SPZ	117	Linear reserve (Bonang River)
893/05	SMS	20	NE (Historic site: Croesus Mines)
893/06	SPZ	88	OG Montane Dry Woodland
893/07	SPZ	170	Tablelands Damp Forest

Forest Block & site number	Zone	Area (ha)	Attributes
Coast Range			
894/01	SPZ	198	Giant Burrowing Frog; Spot-tail Quoll ; Tableland Damp Forest; Wet Forest; includes part ¹⁶ SOS 2S
894/02	SPZ	456	Giant Burrowing Frog (tadpoles in Black Forest Ck); Masked Owl; Shrubby Dry Forest; OG (Heathy Dry Forest and Damp Forest); includes ¹⁷ SOS 3N
894/03	SPZ	86	Linear reserve (Black Forest Ck to Craigie Bog Ck and tributary to Swede Ck)
894/04	SPZ	410	Australian Hobby (nest site); Little Falcon; Montane Riparian Woodland; Riparian Forest; Tableland Damp Forest; ND Montane Dry Woodland; NE (high predicted fauna richness); includes ¹⁶ SOS 1S
894/05	SPZ	28	Linear reserve (Musket Ck Reference Area to Swede Ck)
894/06	SPZ	67	OG Heathy Dry Forest
894/07	SPZ	18	Montane Riparian Woodland (swamp)
894/08	SPZ	58	Linear reserve; Spot-tail Quoll; Montane Riparian Thicket
894/09	SMS	9	<i>Viola caleyanana</i>
Cottonwood			
895/01	SPZ	494	Sooty Owl; OG (Wet Forest, Tableland Damp Forest, Montane Dry Woodland)
895/02	SPZ	675	Treeless Sub-Alpine Complex; OG (Montane Dry Woodland, Sub-alpine Woodland); ND Montane Dry Woodland; NE (Historic Site: Dartmoor Hut)
895/03	SPZ	41	Linear reserve (Grey Gum Tk to Haydens Bog Rd to private land boundary)
895/04	SPZ	69	Linear reserve (Delegate River tributary to Woolybutt corner)
895/05	SPZ	57	OG (Wet Forest; Damp Forest; Montane Dry Woodland)
895/06	SMZ	139	Sooty Owl
895/07	SMZ	85	Sooty Owl
Snowy River			
897/01	SPZ	110	Linear reserve (Yalmy River); <i>Beyeria viscosa</i>
897/02	SMS	20	<i>Beyeria viscosa</i>
Bowen			
901/01	SMS	20	<i>Viola caleyanana</i>
Dellicknora			
902/01	SMS	5	<i>Pterostylis aestivalis</i>
902/02	SMS	106	NE (Historic site: Border Cairn - Black Allen Line); OG (Montane Dry Woodland)
902/03	SPZ	31	Montane Grassy Woodland (basalt form)
902/04	SPZ	57	Montane Grassy Woodland (basalt form); extends into Bowen FMB
902/05	SPZ	496	OG (Damp Forest; Montane Dry Woodland)
Tubbut			
903/01	SPZ	38	Cunningham's Skink (edge of range); Double-barred finch (edge of range); Rainshadow Woodland; Deddick township
903/02	SMS	18	<i>Haloragodendron bauerlenii</i>

APPENDIX C

DESCRIPTION OF GEOGRAPHIC REPRESENTATION UNITS

Refer to Section 3.1 for an explanation of geographic representation units and Map 23 for their locations.

1. Far East Foothills

This unit comprises the rolling and steep hills that extend east from the Cann River valley to the eastern corner of Croajingolong National Park. It includes Coopracambra National Park, the headwaters of the Thurra and Wingan Rivers and the Genoa River valley. Three large areas of granitic soils centred on Noorinbee, Mt Drummer and Maramingo Hill are interspersed with smaller areas of Ordovician sediments and Tertiary deposits. The vegetation is predominantly Lowland Forest in the south of the unit grading into Damp Forest and Shrubby Dry Forest with increasing elevation.

2. Far East Coastal

Undulating low hills from the lower Cann River to Mallacoota and the eastern tip of Victoria dominate this unit. It includes the lower Thurra and Wingan Rivers, Genoa Peak, Mallacoota Inlet, the Howe Range and more than three-quarters of Croajingolong National Park. The geology is dominated by Ordovician sediments, a belt of granite from the Wingan River to Genoa Peak and Quaternary and Tertiary deposits along the coast. The vegetation is mostly Lowland Forest with small pockets of Damp Forest, Coastal Heathland and Banksia Woodland on coastal sands.

3. Cann Foothills

This unit comprises the mountainous headwaters and lower rolling hills of the Cann and Combienbar River catchments. Ordovician and some Devonian sediments underlie the west side of the unit while the eastern side is on Noorinbee granodiorite. The vegetation grades from Lowland Forest in the south to Damp Forest and Shrubby Dry Forest with increasing elevation and finally to Wet Forest on the Errinundra Plateau escarpment in the north-west of the unit. State forest occupies most of this unit.

4. Bemm—Brodrigg Coastal

This unit comprises low hills and plains extending east from the Snowy River floodplain to include Cape Conran, Cabbage Tree, Yeerung River catchment and lower Bemm River and Sydenham Inlet. It contains all of the Cape Conran—Sydenham Inlet Coastal Park and the western end of Croajingolong National Park. The area is mostly on Tertiary deposits with the vegetation predominantly Lowland Forest interspersed with Damp Forest and Riparian Scrub Complex. Large areas of Banksia Woodland interspersed with coastal heathlands occur on the Quaternary sands of the coastal plain.

5. Errinundra Tablelands

This unit is based on the southern extension of the Monaro Tablelands, which rise gently to the Errinundra Plateau. The unit includes the headwaters of the Queensborough, Errinundra, Delegate, Bonang and Bendoc Rivers as well as the northern part of Errinundra National Park and the eastern part of Snowy River National Park. Most of the unit is on Ordovician sediments. It is characterised by mild summers, cold winters and high annual rainfall (800–1600 mm). The Wet Forest of Errinundra Plateau and Coast Range grade into Tablelands Damp Forest or Damp Forest, then Montane Dry Woodland as elevation and rainfall decrease northwards.

6. Brodrigg Foothills

Steep hills and mountainous terrain in the headwaters of the Brodrigg, Yalmy, Rich and Goolengook Rivers characterise this unit. It includes the southern and western parts of Errinundra National Park. Most of the unit is on Ordovician sediments although Kuark Metamorphics form a belt between Murrungowar and

Errinundra Plateau. Mt Ellery, the Goolengook headwaters, part of the Errinundra escarpment and the Goongerah area on granodiorite. The vegetation varies from Wet Forest around the Errinundra escarpment, Mt Ellery and on the Kuark Metamorphics into Damp and then Shrubby Dry Forest with decreasing elevation to the south-west. Warm Temperate Rainforest on the Brodribb River and tributaries is a major feature of this unit.

7. Snowy—Deddick Rainshadow

This unit comprises steep mountainous terrain of the Upper Snowy and Deddick River valleys and southern slopes of Mt Tingaringy which are characterised by low rainfall (600–1000 mm) and distinctive rainshadow vegetation. The unit is dominated by the Cobberas—Tingaringy National Park and private land in the Deddick valley. Only two small areas are State forest. The vegetation is mostly Rainshadow Woodland on the undifferentiated granodiorites of the upper reaches of the Snowy and Deddick Rivers, and Shrubby Dry Forest on Ordovician sediments on the slopes of Mt Tingaringy.

8. Snowy River Valley

This unit is based around the very steep terrain along the middle stretches of the Snowy River valley from McKillops Bridge south to the Buchan River junction. It includes the western fall of Gelantipy Plateau, the headwaters of Mountain Creek and Rodger River and the gentler terrain between Buchan and Wulgulmerang. Most of the unit lies within the Snowy River National Park but State forest is located in Basin and Tulloch Ard blocks. The vegetation is predominantly Shrubby Dry Forest on Snowy River volcanic or Ordovician sediments, grading into Damp Forest with increasing elevation to the west, into Wet Forest in Rodger River, and into Montane Wet Forest on Gelantipy Plateau. Wet Forest also occurs on Ordovician sediments in the more elevated parts of the Basin and Tulloch Ard blocks.

9. Upper Buchan Mountains

This unit extends from the mountainous terrain of the Cobberas, upper Suggan Buggan River, Reedy Creek and Upper Buchan River in the Cobberas—Tingaringy National Park, to the gentler Nunniong Plateau and the steep hills of the lower Buchan River which are in State forest. Most of the unit is on granites and gneisses, although the Reedy Creek area is on Ordovician sediments and the southern-most parts of the unit are on Snowy River volcanic. Vegetation in the montane northern parts of the unit is predominantly Montane Dry Woodland interspersed with smaller areas of Sub-alpine Woodland on exposed hilltops, and Montane Wet Forest or Montane Damp Forest on sheltered aspects. The deeply-incised Reedy Creek and part of the upper Buchan River support Damp Forest and Shrubby Dry Forest which grade into Grassy Dry Forest further downstream. The eastern fall of the Nunniong Plateau supports Montane Wet Forest and large tracts of Wet Forest.

10. Orbost—Buchan Foothills

This unit comprises steep to rolling hills extending from Mt Murrindal and Mt Dawson north of Buchan, through Yellow Waterholes Creek catchment and the lower reaches of the Snowy River, to Mt Buck north of Orbost. Nearly all of the unit is in State forest. It lies on mostly Ordovician sediments with smaller areas of granite, Snowy River volcanic and Tertiary deposits. Vegetation is predominantly Shrubby Dry Forest and Damp Forest on more sheltered sites, grading into Lowland Forest at the southern edge of the unit.

11. Lake Tyers—Corringle Coastal

Undulating rises and low hills between Lakes Entrance and Marlo in the south and Orbost, Wairewa and Colquhoun in the north characterise this unit. It includes Lake Tyers State Park, Hospital Creek, Hartland River, Ewings Marsh Wildlife Reserve and Lake Corringle. The vegetation is dominated by Lowland Forest on Tertiary deposits and Damp Forest in gullies in the north-west of the unit. The distinctive Limestone Box Forest on outcropping Tertiary Limestone around Lake Tyers and along the Hartland River, Hospital Creek and tributary streams of Ewings Marsh is a notable feature of the unit.

APPENDIX D

REPRESENTATIVE CONSERVATION OF ECOLOGICAL VEGETATION
CLASSES ON PUBLIC LAND

Ecological Vegetation Class	Area (ha)	Proportion of public land(%)	Protection Target	Representation (%)					
				Conservation Reserves	Forest Management Zone				Formal Protection*
				(a)	SPZ (b)	SMZ	GMZ other	GMZ timber	(a+b)
16. Lowland Forest	245107	23	30%	26	13	7	7	46	39
29. Damp Forest	238293	23		27	17	4	14	38	44
21. Shrubby Dry Forest	209978	20		43	11	2	24	20	53
30. Wet Forest	90287	9		31	15	4	5	45	46
36. Montane Dry Woodland	48519	5		64	10	1	13	13	73
14. Banksia Woodland	36979	4		63	16	2	16	2	79
26. Rainshadow Woodland	22276	2		100	0	0	0	0	100
17. Riparian Scrub Complex	17665	2		42	58	0	0	0	100
22. Grassy Dry Forest	16918	2		46	14	1	31	8	60
38. Montane Damp Forest	13961	1		76	5	0	0	19	81
39. Montane Wet Forest	13506	1	30%	76	2	0	1	21	78
18. Riparian Forest	12696	1		31	54	2	3	10	85
23. Herb-rich Forest	9723	0.9	30%	16	48	11	10	14	64
8. Wet Heath	9498	0.9		54	45	0	0	0	99
43. Sub-alpine Woodland	7310	0.7		93	3	0	4	0	96
35. Tablelands Damp Forest	6999	0.7		28	30	2	0	40	58
32. Warm Temperate Rainforest	6785	0.6		27	72	0	0	0	100
27. Rocky Outcrop Scrub	5050	0.5		54	29	1	12	3	83
37. Montane Grassy Woodland	4824	0.5		69	9	0	9	13	78
15. Limestone Box Forest	4656	0.4		56	19	5	1	18	75
2. Coast Banksia Woodland	3396	0.3		100	0	0	0	0	100
1. Coastal Dune Scrub	3243	0.3		100	0	0	0	0	100
20. Heathy Dry Forest	2989	0.3	90%	31	55	0	12	1	87
31. Cool Temperate Rainforest	2564	0.2		42	58	0	0	0	100
7. Clay Heathland	1779	0.2		65	30	0	0	0	95
28. Rocky Outcrop Shrubland	1603	0.2		96	4	0	0	0	100
44. Treeless Sub-alpine Complex	1096	0.1		90	10	0	0	0	100
9. Coastal Saltmarsh	791	0.1	90%	95	1	0	0	0	96
12. Wet Swale Herbland	789	0.1		100	0	0	0	0	100
5. Coastal Sand Heathland	681	0.1		100	0	0	0	0	100
24. Foothill Box Ironbark Forest	596	0.1		0	83	0	13	4	83
40. Montane Riparian Woodland	515	0.05		74	26	0	0	0	100
11. Coastal Lagoon Wetland	487	0.05		96	1	0	0	0	97
25. Limestone Grassy Woodland	476	0.05		86	8	0	5	2	94
33. Cool/Warm Rainforest	269	0.03		41	59	0	0	0	100
42. Sub-alpine Shrubland	201	0.02		100	0	0	0	0	100
13. Brackish Sedgeland	195	0.02		100	0	0	0	0	100
4. Coastal Vine-rich Forest	121	0.01	90%	86	5	0	0	0	91
3. Coastal Grassy Forest	90	0.01		100	0	0	0	0	100
10. Estuarine Wetland	81	0.01		72	28	0	0	0	100
41. Montane Riparian Thicket	37	0.004		12	88	0	0	0	100
19. Riparian Shrubland	36	0.003		52	48	0	0	0	100
34. Dry Rainforest	13	0.001		100	0	0	0	0	100
6. Sand Heathland	4	0.0004		0	100	0	0	0	100
OTHER**	8015	0.8							
TOTAL	1051100	100		39	16	4	9	32	55

Sources: Woodgate *et al.* (1994) & GIS (1995). The "Other Public Land category (0.5% of all public land is not shown on this table. the representation levels do not total 100% for some EVCs.

* Formal protection is that provided by conservation reserves and the Special Protection Zone.

** Unclassified vegetation. Water bodies are not included in this analysis

APPENDIX E

REPRESENTATIVE CONSERVATION OF ECOLOGICAL VEGETATION CLASSES IN GEOGRAPHIC REPRESENTATION UNITS

Vegetation														TOTAL							
Ecological Vegetation Class	Lake Tyers - Corangaroo Coast		Bemm-Brodrick Coastal		Far East Coastal		Orbost-Buchan Foothills		Cann Foothills		Far East Foothills		Snowy River Valley		Snowy-Beddick Rainshadow		Errindundra Tablelands		Upper Buchan Mountains		
	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	Area (ha)	Prot* (%)	
Coastal Vegetation																					
1. Coastal Dune Scrub	557	100	909	100	1796	92	-	-	-	-	-	-	-	-	-	-	-	-	-	3242	96
2. Coast Banksia Woodland	503	100	1634	100	1259	100	-	-	-	-	-	-	-	-	-	-	-	-	-	3395	100
3. Coastal Grassy Forest	84	100	6	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	100
4. Coastal Vine Rich Forest	-	-	-	-	86	100	-	-	-	-	35	67	-	-	-	-	-	-	-	121	91
5. Coast Sand Heath	-	-	265	100	416	100	-	-	-	-	-	-	-	-	-	-	-	-	-	681	100
6. Sand Heath	-	-	-	-	-	4	100	-	-	-	-	-	-	-	-	-	-	-	-	4	100
7. Clay Heathland	108	100	-	-	391	82	996	98	15	100	212	100	57	100	-	-	-	-	-	1779	95
8. Wet Heath	11	100	3638	100	5474	100	-	-	7	100	171	68	-	-	-	-	-	-	-	9498	99
9. Coastal Saltmarsh	270	100	312	100	182	81	-	-	-	-	28	100	-	-	-	-	-	-	-	791	96
10. Estuarine Wetland	40	100	-	-	40	100	-	-	-	-	-	-	-	-	-	-	-	-	-	81	100
11. Coastal Lagoon Wetland	10	100	417	97	60	100	-	-	-	-	-	-	-	-	-	-	-	-	-	487	97
12. Wet Swale Herbland	789	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	789	100
13. Brackish Sedge/land	-	-	-	-	195	100	-	-	-	-	-	-	-	-	-	-	-	-	-	195	100
Vegetation - coastal plains & hills																					
14. Banksia Woodland	1421	91	12435	89	20551	74	127	92	146	99	775	59	1522	49	-	-	-	-	-	36977	79
15. Limestone Box Forest	4622	76	-	-	-	-	16	100	-	-	17	100	-	-	-	-	-	-	-	4655	76
16. Lowland Forest	37362	30	41834	31	91840	55	15696	18	10007	14	16494	23	31683	42	206	58	-	-	-	245122	39
17. Riparian Scrub Complex	1384	100	7054	97	7525	100	74	76	91	100	494	98	1043	99	-	-	-	-	-	17664	99
18. Riparian Forest	-	-	1142	89	2356	92	1127	82	2151	86	2004	78	3072	82	634	91	27	75	28	150	93
Foothill Vegetation																					
19. Riparian Shrubland	-	-	-	-	-	-	17	100	-	-	1456	80	439	91	13	100	5	100	-	36	100
20. Heathy Dry Forest	-	-	-	-	-	-	107	98	-	-	18758	17	20182	75	40381	81	223	100	-	2987	87
21. Shrubby Dry Forest	1483	35	361	86	1449	87	43605	25	29776	24	1970	18	20182	75	40381	81	36883	84	1807	209971	53
22. Grassy Dry Forest	-	-	68	40	46	12	880	60	437	75	190	17	1170	73	2546	85	2610	99	-	16913	60
23. Herb Rich Forest	-	-	11	-	221	64	1213	81	1234	38	702	50	2933	70	1086	68	-	-	-	8965	40
24. Foothill Box-ironbark Forest	-	-	-	-	-	-	199	93	-	596	83	-	-	-	-	-	-	-	-	2320	62
25. Limestone Grassy Woodland	-	-	-	-	13	-	-	-	-	-	258	100	-	-	-	-	-	-	-	596	83
26. Rainshadow Woodland	-	-	-	-	-	-	-	-	-	-	1466	100	19459	100	25	12	1326	100	22276	94	94
27. Rocky Outcrop Scrub	44	44	-	-	-	-	2150	75	402	60	-	-	-	-	-	-	-	-	-	33	475
28. Rocky Outcrop Shrubland	-	-	-	-	215	98	17	71	40	100	-	-	-	-	-	-	-	-	-	6	33
29. Damp Forest	3635	42	3674	40	12427	70	27967	30	57473	29	44205	23	30936	63	33037	78	4432	85	5548	159	100
30. Wet Forest	-	-	67	20	616	69	28	9	31380	41	14576	27	2477	76	10740	95	204	99	23250	72	5049
31. Cool Temperate Rainforest	-	-	-	-	-	-	441	100	920	100	-	-	-	-	94	100	22	100	910	159	100
32. Warm Temperate Rainforest	106	100	300	100	885	100	525	100	2154	100	1276	100	1193	100	284	100	100	100	14	2564	46
33. Cool/Warm Overlap RF	4	100	-	-	-	-	8	100	179	100	26	100	13	100	3	100	-	-	177	2564	100
34. Dry Rainforest	5	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	6785	100
Montane & tableland vegetation																				267	100
35. Tablelands Damp Forest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	100
36. Montane Dry Woodland	-	-	-	-	-	-	-	-	55	26	-	-	-	-	1210	63	3331	90	6999	6999	58
37. Montane Grassy Woodland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	100	916	98	8268	35652	73
38. Montane Damp Forest	-	-	-	-	-	-	-	-	119	89	-	-	-	-	94	100	478	100	73	3890	78
39. Montane Wet Forest	-	-	-	-	-	-	-	-	575	86	-	-	-	-	4786	100	62	100	256	13014	80
40. Montane Riparian Woodland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	100	627	7453	81
41. Montane Riparian Thicket	-	-	-	-	-	-	-	-	37	100	-	-	-	-	-	-	72	100	171	81	7453
Sub-alpine vegetation																				271	100
42. Sub-alpine Shrubland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43. Sub-alpine Woodland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	201	100
44. Treeless Sub-alpine Complex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	265	100	238	100	402	6404	96
																			92	1004	100

Sources: Woodgate *et al.* (1994) & GIS (1995). Note that the "Other Public Land" category (0.5% of all public land) is not shown on this table.

* Formal protection is that provided by conservation reserves and the Special Protection Zone.

APPENDIX F

MANAGEMENT OF ECOLOGICAL VEGETATION CLASSES

For each Ecological Vegetation Class (EVC) occurring in State forest, the following includes a brief description adapted from Woodgate *et al.* (1994), a summary of its conservation status, and a summary of conservation measures adopted in the plan (including old-growth forest representation). Numbers in brackets (eg. 808/2) refer to the site numbers of areas in the Special Protection Zone (SPZ). Full site details are listed in Appendix B.

Coastal vegetation and heathlands (EVC nos. 1–13 and 17)

Except for insignificant areas occurring in State forest, ten of the EVCs (nos. 1–5 and 9–13) in this category are almost entirely within coastal parks and reserves. The four EVCs with significant areas in State forest are heathlands. While all heathlands and a buffer of 40 m. are included in the SPZ not all are shown on Map 26. Some of the larger, more significant examples, along with their hinterland, have been included in designated areas of the SPZ.

Sand Heathland (EVC no. 6) The only example of this EVC in the FMA occurs in State forest adjacent to Quire Track just east of Boggy Creek crossing. It is a low woodland dominated by *Eucalyptus willisii* (Shining Peppermint) with an understorey of *Leptospermum myrsinoides* (Heath Tea-tree) and other heathland species. It has been placed in the SPZ (808/2).

Clay Heathland (EVC no. 7) The inland form of this highly diverse vegetation class is widespread but uncommon in the FMA. It often features *Eucalyptus conspicua* (Swamp Stringybark), has a variable shrub layer and a ground layer rich in sedges and orchids. Good examples occur in the Snowy River National Park (Mooresford Tk) and the Jones Creek Reference Area. Additional areas around Buchan (Site nos. 808/1 and 803/7), and south of Wangarabell (877/1) have been included in the SPZ.

Wet Heathland (EVC no. 8) Commonly known as "Grass-tree Plains" and dominated by *Xanthorrhoea resinosa* (Spear Grass-tree) this EVC occurs on poorly drained flats in the lowlands from Cabbage Tree to Mallacoota. Over half of this class, mainly in Croajingolong National Park and Cape ConranSydenham Inlet Coastal Park. The balance is part of the SPZ in State forest.

Riparian Scrub Complex (EVC no. 17) Dominated by *Melaleuca squarrosa* (Scented Paperbark) this EVC is common in low elevation drainage lines east of Orbost. It is well reserved in coastal parks and reserves across its range. Areas of this EVC with old-growth forest characteristics, or forming part of species rich mosaics, have also been included in the SPZ along with some of their hinterlands.

Forests of the coastal plains and hills (EVC nos. 14, 15, 16 and 18)

Banksia Woodland (EVC no. 14) occurs mostly on the coastal plains east of Orbost. It is a variable vegetation type dominated by *Banksia serrata* with a range of eucalypts in which *Eucalyptus consideniana* (Yertchuk) is frequently present. Banksia Woodland (including areas identified as old-growth forest) is well represented in coastal parks and reserves. The floristics of this class are likely to vary substantially across its range. Inland examples which are likely to contribute substantially to local flora and fauna diversity are, however, poorly represented in the reserve system. Some of these (most were also identified as old-growth forest) have been included in the SPZ (Site nos. 823/2, 827/2, 827/3, 829/4, 829/8, 864/1 and 874/2).

Limestone Box Forest (EVC no. 15) is generally dominated by *Eucalyptus baueriana* (Blue Box) and confined to outcropping tertiary limestone in slopes and gullies between Metung and Orbost. Over half its total area, which includes nearly all the area identified as negligibly disturbed forest, is reserved in Lake Tyers State Park and Ewings Marsh Wildlife Reserve. Additional areas, including those identified as old-growth forest, will be protected in linear reserves (SPZ) on Simpson's Ck (826/2), Dinner Ck (826/3), Hartland River (802/3) and Hospital Ck (802/5) and a larger area around Nargan Ck (801/1).

Lowland Forest (EVC no. 16) This abundant EVC dominates the coastal hills and lowland plains of the East Gippsland and accounts for 23% of its native vegetation. It is most frequently dominated by *Eucalyptus sieberi* (Silvertop Ash) but includes a range of other eucalypts. Lowland Forest is well represented in coastal reserves but less so in the foothills. Furthermore, a history of selective logging, stock grazing and wildfire has depleted old-growth forest in this EVC (Woodgate *et al.* 1994). A number of areas have been added to the SPZ to improve representation of old-growth and negligibly disturbed Lowland Forest in the foothills. These include old-growth forest in the Betka River catchment (853/4) and west of the Cann Valley highway at Weeragua (883/4) and negligibly disturbed forest south of the Buchan—Bruthen Rd (803/2), south of Tonghi (864/1), east of Tamboon Rd (862/2) and in the lower Hard-to-Seek Ck catchment (854/1).

Lowland Forest is a broadly defined EVC with considerable variation across its range. Examples of the inland limits of its range have therefore been placed in the SPZ to improve its representative conservation. These include areas in the Rich River catchment (842/8) and the Martins Ck (836/8), Coogalah (875/1), Goolengook (839/5) and Drummer (874/7) forest management blocks.

Riparian Forest (EVC no. 18) is a particularly diverse EVC occurring on larger creeks and river flats through the foothills although clearing for agriculture has reduced its extent. It is frequently dominated by *Eucalyptus croajingolensis* (Gippsland Peppermint), *E. viminalis* (Manna Gum), *E. elata* (River Peppermint) or *E. botryoides* (Southern Mahogany). Most Riparian Forest occurs along major streams in reserves, Heritage River corridors or the LCC-designated Natural Features Zones (both parts of the linear reserve network). The most notable exception is in the Cann Foothills geographic representation unit where it is not well represented in reserves. This has been rectified by placing linear reserves (SPZ) on major streams in the Cann River headwaters (Site nos. 887/3, 883/3 and 883/5). Riparian Forest has high structural complexity and is important for fauna conservation, especially during fire or drought (Lugg *et al.* 1993). Most other stands, especially those identified as old-growth or negligibly-disturbed forest, have been included in linear reserves (designated primarily for wildlife conservation).

Foothill vegetation (EVCs nos. 19–30)

Three EVCs in this category - Riparian Shrubland (EVC no. 19), Rainshadow Woodland (EVC no. 26) and Rocky Outcrop Shrubland (EVC no. 28) - are either confined to national parks and conservation reserves or the very small areas occurring in State forest are insignificant.

Heathy Dry Forest (EVC no. 20) Typically dominated by *Eucalyptus consideniana* (Yertchuk), *E. dives* (Broad leaved Peppermint) or *E. macrorhynca* (Red Stringybark) with a low heathy understorey, this vegetation class is confined to exposed slopes and ridges at higher elevations with low rainfall. Only small areas and 50% of that identified as old-growth forest are reserved in the Coopracambra and Cobberas—Tingaringy National Parks. The best examples in State forest have therefore been included in the SPZ. These include areas adjacent to the upper Buchan River between Mundy Plain Track and Green Gully (817/1), in the headwaters of Kenny Ck (808/1) and on the Coast Range (894/6).

Shrubby Dry Forest (EVC no. 21) is widespread and occupies ridges and drier slopes in the foothills and mountains. The most common tree species are *Eucalyptus macrorhynca* (Red Stringybark), *Eucalyptus consideniana* (Yertchuk), *E. polyanthemos* (Red Box), *E. sieberi* (Silvertop Ash) and *E. globoides* (White Stringybark). Shrubby Dry Forest usually occupies areas with low site quality giving rise to low tree height and a medium to low shrub layer. It is well represented in the Cobberas—Tingaringy, Snowy River and Coopracambra National Parks but less well conserved in the foothills and Errinundra Tablelands. This has been rectified by placing additional areas in the SPZ, including old-growth and negligibly disturbed forest in Dawson Range (812/1), Martins Ck (836/5, 836/11), Sardine (844/2) and Tabby (845/1) forest management blocks, the Hospital Ck headwaters (805/1) and the Three Sisters area (887/1).

Grassy Dry Forest (EVC no 22) A variable EVC which occurs on ridges and upper slopes in areas with moderately fertile soils and moderate to low rainfall. Overstorey species can include *Eucalyptus globulus* ssp. *globulus* (Gippsland Blue Gum), *E. bridgesiana* (But But), *E. consideniana* (Yertchuk) and *E. mannifera* (Brittle Gum) and the understorey includes scattered shrubs, plentiful grasses and drought-tolerant herbs. Grassy Dry Forest is well represented in the Cobberas—Tingaringy, Snowy River and Coopracambra National

Parks which also include almost all the old-growth and negligibly-disturbed forest for this EVC. It is rarer and less well represented in the foothills. Substantial areas north of Goongerah (891/5, 891/6) and in the Bete Bolong Creek catchment (824/1) have therefore been included in the SPZ. Smaller examples across the FMA have also been included in the SPZ to ensure the variability of this class is represented.

Herb Rich Forest (EVC no. 23) Fertile sites on lower slopes and gullies support this EVC which has been substantially depleted by agricultural clearing and is poorly represented in conservation reserves. The overstorey typically features box species such as *E. melliodora* (Yellow Box), *E. angophoroides* (Apple-topped Box) or *E. bosistoana* (Gippsland Grey Box). A high cover of grasses and a diverse herb layer is characteristic. Chesterfield *et al.* (1988) described this vegetation in the Brodribb forest management block and found it to exhibit high species diversity. Small areas of Herb-rich Forest are reserved in the Errinundra and Coopracambra National Parks but most are in State forest close to settlements. Substantial areas, including all viable areas identified as old-growth or negligibly-disturbed forest, have therefore been placed in the SPZ. These include areas near Timbarra (814/5) and Goongerah (840/2), around Buchan (810/1), along the lower Snowy River (825/3), south of Errinundra (838/2) and south of Wangarabell along the Genoa River (877/1, 878/11).

Foothill Box-Ironbark Forest (EVC no. 24) While the dominant eucalypts in this EVC (*E. tricarpa* and *E. polyanthemus*) occur in a number of vegetation classes such as Shrubby Dry Forest and Lowland Forest, Box-Ironbark Forest as defined by Woodgate *et al.* (1994) has a distinctive understorey and is confined to Martins Creek block and small areas near Lake Bunga and Lake Tyers. Most of the unreserved and old-growth forest areas of this EVC have been placed in the SPZ (836/5, 836/11, 836/12 and 836/13).

Limestone Grassy Woodland (EVC no. 25) Dominated by *E. melliodora* (Yellow Box) and *E. viminalis* (Manna Gum), this class occurred on fertile soils in the Buchan valley which have been mostly cleared for agriculture. Most remaining areas of it on public land, including those identified as old-growth or negligibly-disturbed forest, are reserved in the Snowy River National Park and in Cave Reserves around Buchan and Murrindal. One of the best remaining stands is at the southern end of Gillingal Station, which is private land. The remaining small areas in State forest have been placed in the SPZ.

Rocky Outcrop Scrub (EVC no. 27) Various dominated by *Acacia sylvestris* (Red Wattle), *Eriostemon trachyphyllus* (Rock Waxflower), *Eucalyptus elata* (River Peppermint) or *E. smithii* (Gully Gum), this unusual EVC occurs on northern and western slopes in the western part of the FMA. Rocky Outcrop Scrub is well represented in the Cobberas-Tingaringy and Snowy River National Parks at higher elevations, but areas with old-growth characteristics or at lower elevations are less well protected. Areas of old-growth Rocky Outcrop Scrub in Rich (842/17) and Sardine (844/2) forest management blocks and a large area east of the Timbarra River (808/1) have therefore been included in the SPZ.

Damp Forest (EVC no. 29) This tall open forest is widespread in the FMA, occupying gullies and sheltered slopes in the lowlands and foothills, expanding into more exposed situations in areas with higher elevation and rainfall. It features various eucalypts including *Eucalyptus cypellocarpa* (Mountain Grey Gum), *E. croajingolensis* (Gippsland Peppermint) and various stringybarks at lower elevations, *E. fastigata* (Cut-tail) and *E. obliqua* (Messmate) at higher elevation and *E. globulus* ssp. *pseudoglobulus* (Gippsland Blue Gum) on more fertile soils. Damp Forest is well represented in all major parks but not in the foothill units (which include few park areas) or on the Errinundra Tablelands. Old-growth forest is also under represented. Additional areas have therefore been placed in the SPZ, including old-growth and negligibly-disturbed forest in the Dawson Range (812/1), Martins Ck (836/5), Sardine (844/2), Rich (842/8) and Bonang (893/2) forest management blocks, Black Forest Ck (894/2), Three Sisters area (887/1) and Tennyson Ck headwaters (889/1).

Two distinct floristic vegetation communities that fall under this EVC category, and that are limited in extent and not well represented in existing reserves, have also been included in the SPZ. They are Basaltic Damp Forest (Peacock *et al.* 1992, O'Neill *et al.* in prep) (844/10) and a vine-rich form of Damp Forest (Earl *et al.* 1989) (841/2).

Wet Forest (EVC no. 30) is perhaps the best known tall forest of the region, valued for its old-growth forest characteristics, aesthetic qualities and high timber-producing capacity. It occurs in the higher foothills and mountains in sheltered situations with high rainfall, where it can be dominated by *Eucalyptus denticulata* (Errinundra Shining Gum), *E. fastigata*, *E. obliqua*, *E. regnans* (Mountain Ash) or *E. viminalis* (Manna Gum). The creation of Errinundra National Park and the Rodger extension to the Snowy River National Park in the late 1980s placed substantial areas of Wet Forest in the park system. Wet Forest is less well represented in the Cann Foothills and west of the Snowy River, and old-growth forest is also under represented. Additional areas have therefore been placed in the SPZ, including old-growth forest in the upper Timbarra River (814/1, 814/5), Yalmy forest management block (846/2), adjacent to Big River south of Mt Ellery (841/5), in the Goolengook River headwaters (839/1) and along the Bungywarr (885/1) and Hensleigh (885/3) Creeks.

Rainforest (EVCs 30–34)

Most of Victoria's Warm Temperate Rainforest (87%) is found in East Gippsland. It occurs in small stands in sheltered locations scattered through the lowlands and foothills from sea level to about 700 m elevation. Cool Temperate Rainforest occurs on moist gullies and sheltered slopes from about 600 m to 1200 m elevation. Its distribution is centred on the Errinundra Plateau with outlying stands in the Rodger River catchment and Nunniong Plateau. Cool/ Warm Temperate Overlap Rainforest occurs in foothill gullies where elements of these two communities overlap. The most notable examples are within the Arte River Flora Reserve and along the Little Goolengook River and Bungywarr Creek in State forest. Dry Rainforest is a less diverse form of Warm Temperate Rainforest, confined to small stands on rocky sites which provide protection from fire. It occurs in parts of the Snowy and Murrindal River valleys which are protected in reserves. All rainforest and associated buffering vegetation is included in the SPZ.

Montane and tableland vegetation (EVCs 35–41)

Tablelands Damp Forest (EVC no. 35) is transitional between Wet Forest and Dry Montane Woodland and is typically dominated by *E. croajingolensis* (Gippsland Peppermint) and *E. dalrympleana* (Mountain Gum) with an understorey of broad-leaved shrubs and heaths. Clearing of the Monaro Tablelands for agriculture has probably depleted Tablelands Damp Forest in NSW. In East Gippsland, it is confined to the northern slopes of Errinundra Plateau and the Cottonwood Range. Good examples occur in the Errinundra National Park but, due to its significance and to achieve old-growth forest conservation targets, additional areas have been included in the SPZ. These include old-growth forest adjoining the Gap Rd (890/6) and Clarkeville Rd (892/7) and in the vicinity of Back Ck (892/13).

Montane Dry Woodland (EVC no. 36) is widespread and variable and the driest of the montane and tablelands forests. The overstorey includes *Eucalyptus pauciflora* (Snow Gum), *E. rubida* (Candlebark), *E. dives* (Broad-leaf Peppermint), *E. mannifera* (Brittle Gum), *E. radiata* (Narrow-leaf Peppermint) or *E. dalrympleana* (Mountain Gum). Although well represented in the Cobberas–Tingaringy National Park, Montane Dry Woodland (especially old-growth forest) is poorly represented on the Errinundra Tablelands. Additional areas have therefore been placed in the SPZ, including old-growth forest adjacent to the old Bonang-Bendoc Rd (895/2), in the Back Ck area (892/8), in the Dollicknora area (902/05) and negligibly-disturbed forest north of the Errinundra National Park (894/4).

Montane Grassy Woodland (EVC no. 37) occurs at higher elevations mostly in the Cobberas–Tingaringy National Park. The overstorey is dominated by Snow Gum (*E. pauciflora*), Mountain Gum (*E. dalrympleana*) and Candlebark (*E. rubida*) with a sparse shrub layer and grassy ground layer. No old-growth forest was identified in this EVC and the only areas identified as negligibly-disturbed forest occur in national parks. A distinct form of Montane Grassy Woodland dominated by *E. viminalis* (Manna Gum), *E. pauciflora* (Snow Gum) and *E. ovata* (Swamp Gum) is confined to basalt areas adjacent to the TubbutBonang Rd and has been included in the SPZ (902/3, 902/4).

Montane Damp Forest (EVC no. 38) occurs in sheltered slopes and gullies at higher elevations mostly in the Cobberas–Tingaringy National Park. The overstorey is dominated by *Eucalyptus croajingolensis* (Gippsland Peppermint), *E. delagatensis* (Alpine Ash) and *E. obliqua* (Messmate). Montane Damp Forest (including old-growth and negligibly-disturbed forest) is well reserved across its range in the FMA.

Montane Wet Forest (EVC no. 39) Sheltered, montane slopes and gullies on Snowy River volcanics support this well-known EVC dominated by *E. delegatensis* (Alpine Ash), which is more common west of the FMA. Most (including old-growth and negligibly-disturbed forest) occurs in the far north-west of the area, in the headwaters of Reedy and Mellick Munjie Creeks where it is well represented in the Cobberas—Tingaringy National Park or on the Gelantipy Plateau in the Snowy River National Park. Smaller areas occur around the Errinundra Plateau mostly in the Errinundra National Park. A unique form of this EVC with a Cool Temperate Rainforest understorey, adjacent to the park (Westaway *et al.* 1990), has been included in the SPZ (837/5).

Montane Riparian Woodland (EVC no. 40) This open grassy woodland is associated with meandering streams flowing through the dry woodlands of the Wulgulmerang and Monaro Tablelands. It often features *Eucalyptus stellulata* (Black Sallee), *E. radiata* (Narrow-leaf Peppermint) or *E. camphora* (Mountain Swamp Gum) over a dense sward of grasses and a high diversity of herbs. Like other tablelands EVCs, Montane Riparian Woodland has been depleted by agricultural clearing. It mainly occurs in the Buchan River headwaters in the Cobberas—Tingaringy National Park. It is less common on the Errinundra Tablelands and the remaining stands have been placed in the SPZ. These occur on Back Ck (892/1, 892/4), Queensborough River (894/4) and on the Coast Range (894/7).

Montane Riparian Thicket (EVC no. 41) of *Leptospermum grandifolium* (Mountain Tea-tree) is confined to streams in Montane Wet Forest. The only mapped areas of this EVC in East Gippsland occur in a small area south-east of Mt Ellery in the Errinundra National Park and in the Ada River headwaters in State forest. Additional areas of this EVC would occur in most areas of Montane Wet Forest and its reservation status would be similar.

Sub-alpine vegetation

Sub-alpine Shrubland (EVC no. 42) is entirely within the Cobberas—Tingaringy section of the Alpine National Park.

Sub-alpine Woodland (EVC no. 43) Commonly known as Snow Gum Woodland, this EVC is confined to high elevation areas in the FMA. It is dominated by *Eucalyptus pauciflora* (Snow Gum) with an understorey of low shrubs, grasses and herbs. Most (including all stands identified as negligibly-disturbed forest) is reserved in the Cobberas—Tingaringy National Park. However, this EVC is not as well represented on the Errinundra Tablelands and some additional areas have been added to the SPZ. These include old-growth forest next to the Old Bonang—Bendoc Rd (895/2) and an area along the Delegate River (890/8).

Treeless sub-alpine complex (EVC no. 44) includes a number of floristic communities associated with poorly-drained sub-alpine plains and alluvial flats. Most are in the Cobberas—Tingaringy section of the Alpine National Park and other reserves such as the Errinundra National Park, Little Bog Creek Flora Reserve and the Nunnett Plain Natural Features and Scenic Reserve. There are however, some small but significant areas that have been added to the SPZ. These occur on the upper reaches of the Delegate River, north of Errinundra National Park (890/3, 895/2 and 893/3) and at Mundy Plain on the Nunniong Plateau (817/2). The vegetation of the upper Delegate River is a mosaic of wet heathland, *Sphagnum* moss beds and riparian woodlands. This vegetation was probably more widespread on the Monaro Tablelands prior to extensive clearing and drainage of swamps. A number of rare and threatened species occur in the area, including the nationally threatened *Euphrasia scabra* (Rough Eyebright) which also occurs at Mundy Plain. Along with other heathland type vegetation this EVC will be protected by 40-metre buffers.

APPENDIX G

DEFINITION OF RAINFOREST

The definition of rainforest in Victoria's Rainforests - An Overview (CFL 1987) is as follows:

Rainforest is defined ecologically as closed broadleaved forest vegetation with a more or less continuous rainforest tree canopy of variable height, and with a characteristic composition of species and life forms.

Rainforest canopy species are defined as shade tolerant tree species which are able to regenerate below an undisturbed canopy, or in small canopy gaps resulting from locally recurring minor disturbances, such as isolated windthrow or lightning strike, which are part of the rainforest ecosystem. Such species are not dependant on fire for their regeneration.

From this, a more specific, working definition has been developed for field identification of rainforest in East Gippsland.

Rainforest in the FMA is recognised as forest where the highest proportion of foliage cover is contributed by one or more of the following species.

Warm Temperate character species

<i>Acacia melanoxylon</i>	Blackwood
<i>Acmena smithii</i>	Lilly Pilly
<i>Elaeocarpus reticulatus</i>	Blue Olive-berry
<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Tristaniaopsis laurina</i>	Kanooka
<i>Cissus hypoglauca</i>	Jungle Grape
<i>Rapanea howittiana</i>	Mutton-wood

Cool Temperate character species

<i>Acacia melanoxylon</i>	Blackwood
<i>Atherosperma moschatum</i>	Sassafrass
<i>Elaeocarpus holopetalus</i>	Black Olive-berry
<i>Notelaea ligustrina</i>	Privet Mock Olive
<i>Pittosporum bicolor</i>	Banyalla
<i>Podocarpus lawrencei</i>	Mountain Plum Pine
<i>Tasmannia</i> sp. aff. <i>xerophila</i>	Errinundra Pepper
<i>Telopea oreades</i>	Gippsland Waratah

Notes

1. Foliage cover is the proportion of ground area covered by the vertical projection of foliage and branches (the shadow cast assuming the sun is directly overhead)
2. To be considered rainforest a stand of trees meeting the above criteria should be at least 0.4 ha or linear strips along streams should be at least 20 m wide and not less than 100 m long.
3. These definitions are intended as simple aids to field identification. There will inevitably be areas where its strict interpretation would be inappropriate. For example:
 - large rainforest stands may include a sparse eucalypt overstorey
 - areas dominated by Blackwood with few other rainforest characteristics should not be considered rainforest
 - some areas with very well developed rainforest characteristics that are smaller than the specified minimum size for rainforest, may be treated as rainforest.

APPENDIX H

MANAGEMENT OF RARE OR THREATENED PLANT SPECIES

Abbreviations:

EVC Ecological Vegetation Class	FMA Forest Management Area
FMB Forest management block	NFZ Natural features zone specified by the
NP National park	OG Old-growth forest
RF Riparian Forest	SF State forest
SMS Special Management Site (point localities)	SMZ Special Management Zone
SPZ Special Protection Zone	WTR Warm Temperate Rainforest
LCC Land Conservation Council	

Status codes (at the start of each line): e = endangered; v = vulnerable; r = rare (Flora Information System 1995) Capitals indicate Australia-wide status (Briggs and Leigh 1988)

	Species	No. of records	Comments / protection measures
Category 1	Threatened in Victoria or nationally significant		
e	<i>Alectryon subcinereus</i>	3	Recorded in Dry Rainforest in Maramingo FMB, one in park and two in SPZ (878/6)
Rr	<i>Burnettia cuneata</i>	4	One SF population in SMS in Stoney Peak FMB (853/9)
v	<i>Calorophus elongatus</i>	6	All SF populations in SPZ, SMZ and three SMS in Clinton and Tamboon FMB (861/1 and 4, 863/8)
v	<i>Cryptostylis erecta</i>	5	Mainly recorded in heath. All SF populations in SPZ (876/10) in Buckland FMB
Vv	<i>Cryptostylis hunteriana</i>	19	Mostly recorded in heath. All SF populations protected by SPZ, SMZ and five SMS
Rr	<i>Cyathea cunninghamii</i>	22	Best SF populations protected by SPZ and SMZ. Remaining populations in SMS in Goolengook FMB (839/3) and Drummer FMB (874/4)
v	<i>Cyathea leichhardtiana</i>	21	Most records in parks in eastern part of FMA. All SF records protected by SPZ
v	<i>Dendrobium speciosum</i>	9	All SF populations in SPZ, SMZ and one SMS in Stoney Peak FMB (853/10)
v	<i>Dillwynia prostrata</i>	4	All SF populations in SPZ, SMZ and one SMS in Seldom Seen FMB (818/2)
Rv	<i>Discaria pubescens</i>	12	Most populations along roadsides in Snowy River NP and on private land. In SF, two populations in SMZ in Little River FMB (819/1)
v	<i>Eriostemon virgatus</i>	6	Two populations in SF both in SPZ in Sisters FMB (887/1)
Ve	<i>Euphrasia scabra</i>	5	Two SF populations in SPZ in Mundys Plain FMB (817/2) and Delegate FMB (890/3)
e	<i>Gahnia subaequiglumis</i>	2	One SF population along Delegate River near Gap Rd. In SMS in Delegate FMB (890/9)
v	<i>Gingidia harveyana</i>	4	One SF record from Nunnett Plains in SMS (814/08)
Rr	<i>Haloragodendron baeuerlenii</i>	22	One population in SF, protected by SMZ in Tubbut FMB (903/2)
v	<i>Korthalsella rubra</i>	4	All records from WTR and one SF population in SPZ (812/1)
v	<i>Livistona australis</i>	9	All records from WTR and RF. The two SF populations are in SMS in Raymond FMB (828/1 and 2)

Species		No. of records	Comments / protection measures
Category 1 continued			
Rv	<i>Olearia allenderae</i>	9	All SF populations protected in SMZ
v	<i>Phebalium squameum</i> ssp. <i>coriaceum</i>	1	This population is in SMZ (827/1) around Mt Buck
v	<i>Poa saxicola</i>	2	One SF population in SMZ in Cabbage Tree FMB(832/2), other record from park
Rr	<i>Pomaderris costata</i>	6	SF populations in NFZ along Brodribb River, SPZ in Goongerah FMB (891/4, 7 and 8) and one in SMS in Tabby FMB (845/05)
v	<i>Prasophyllum lindleyanum</i>	2	Only one SF population in SMS in Buckland FMB (876/12)
v	<i>Prasophyllum parviflorum</i>	3	All SF populations in SPZ in Buckland FMB (876/10) and East Wingan FMB (854/2)
Rr	<i>Prostanthera walteri</i>	17	Mostly recorded in Snowy and Errinundra NP, all SF populations in SPZ, SMZ and one SMS in Goongerah FMB (891/09)
Rr	<i>Pseudanthus divaricatissimus</i>	2	Only one population in SF, protected by SPZ in Maramingo FMB (878/6)
e	<i>Pseudoraphis paradoxa</i>	11	Two SF populations in SPZ in Colquhoun FMB (801/01 and 801/02) and one in Tildesley FMB (802/2)
v	<i>Pterostylis baptistii</i>	4	Two SF populations in SPZ in Buckland FMB (876/10) and East Wingan FMB (854/2)
Vv	<i>Pterostylis cucullata</i>	2	Both populations recorded in SF and protected by SPZ (844/07)
v	<i>Pterostylis pedoglossa</i>	5	Two records in SF, one in SPZ (876/10) and one SMS in East Wingan (854/05)
v	<i>Pultenaea subspicata</i>	3	Two populations recorded on private land, one SF record in SMZ in Little River FMB (819/1)
v	<i>Sambucus australasica</i>	10	Only one SF population recorded and protected by SPZ in Loongelaat FMB (825/02)
e	<i>Sarcochilus falcatus</i>	5	Only one SF population recorded, protected by SPZ in Drummer FMB (874/1)
Rv	<i>Spyridium cinereum</i>	42	Mostly recorded in the heathlands of Betka FMB in park. All SF populations are in coastal heathland and protected by buffers
v	<i>Thelymitra circumsepta</i>	5	The only SF population protected by SMS in Delegate FMB (890/9)
Vv	<i>Thelymitra matthewsii</i>	4	Three SF populations - locations confidential
Vv	<i>Prasophyllum frenchii</i>	4	Three populations in Park, one in SMS near Mt McLeod in Basin FMB (810/03)
Category 2 Rare in Victoria; poorly known or at edge of range in East Gippsland			
r	<i>Adiantum formosum</i>	9	All records in WTR or RF. One SF record in SMZ in Jones FMB (871/2)
r	<i>Asplenium trichomanes</i> ssp. <i>quadrivalens</i>	10	One SF population in SPZ along Hospital Creek (802/5)
r	<i>Beyeria lasiocarpa</i>	27	Recorded in a range of EVCs, mostly WTR. Most SF records are in SPZ and SMZ, other records protected by stream buffers
r	<i>Beyeria viscosa</i>	21	All SF records protected by SPZ; SMZ; two SMS in Lockup and stream or rainforest buffers
r	<i>Bossiaea riparia</i>	2	One population in SF along Tonghi Creek in SPZ(871/01)

	Species	No. of records	Comments / protection measures
Category 2 continued			
r	<i>Callistemon subulatus</i>	10	All SF populations protected in SPZ and two SMS in far east of FMA
r	<i>Commersonia</i> sp. aff. <i>fraseri</i>	4	One SF population in SMS (868/3) in Lind FMB
r	<i>Correa lawrenciana</i> var. <i>rosea</i>	7	One SF population protected by SMS (814/2) in Timbarra FMB
r	<i>Cyathea X marcescens</i>	8	All records from WTR and any SF populations are in SPZ, SMZ or SMS (839/3)
r	<i>Desmodium varians</i>	6	All SF populations in SPZ, SMZ and one SMS in Rich FMB (842/05)
r	<i>Deyeuxia parviseta</i> var. <i>boormanii</i>	2	One SF record in Brodribb FMB (840/03); other record in Errinundra National Park
r	<i>Dipodium variegatum</i>	2	Both populations in SMS - Tamboon FMB (863/07) and Maramingo FMB (878/16)
r	<i>Genoplesium pumilum</i>	5	Four SF populations, one in SPZ (854/2), one in West Bemm SMS (834/2) East Wingan SMS (854/5) and Little River Swamp FMB (SMS 866/03)
r	<i>Euchiton umbricolus</i>	4	One SF population in SPZ in Curlip FMB (827/3)
r	<i>Goodenia bellidifolia</i>	4	Recorded only in heathlands in the east. SF populations protected by SMZ in Maramingo FMB (878/1) and two SMS in Stoney Peak FMB (853/8 and 9)
r	<i>Hakea macraeana</i>	1	In SPZ in Goongerah FMB (891/07)
r	<i>Hibbertia rufa</i>	10	Recorded only in heathland in the east. SF populations protected by SPZ, SMZ and one SMS in Stoney Peak FMB (853/08) and one SMS in East Wingan FMB (854/06)
r	<i>Leptorhynchus elongatus</i>	5	Two SF populations, one in SMZ in Jones FMB (877/02) and one SMS in Stoney Peak FMB (853/08)
r	<i>Leptospermum emarginatum</i>	3	Two SF populations both recorded in SPZ in Maramingo FMB (878/02)
r	<i>Lepyrodia anarthria</i>	8	All records from heathland and Riparian Scrub and protected by SPZ, SMZ and buffers. One SMS in Stoney Peak FMB (853/11) and one in East Wingan FMB (854/06)
r	<i>Leucopogon microphyllus</i> var. <i>pilibundus</i>	3	All populations in SF, one in SPZ in Sisters FMB and two SMS in Statham FMB (816/13 and 14)
r	<i>Marsdenia flavescens</i>	10	All records from WTR in the south-western part of FMA. SF populations in SPZ of Loongelaat FMB (825/02) and SMS in Colquhoun FMB (801/09)
r	<i>Notothixus subaureus</i>	4	The only SF population is near Betka R (SMS 852/04)
r	<i>Olex stricta</i>	3	All three records in SMS in Clinton (861/03), Thurra (862/04) and Tamboon (863/9) FMBs
r	<i>Olearia viscosa</i>	1	One population in SMS in Colquhoun FMB (801/09)
r	<i>Oxalis magellanica</i>	5	Two SF populations in SMZ in West Errinundra FMB (837/04)
r	<i>Ozothamnus argophyllus</i>	8	Two SF populations, one in SPZ in Binns FMB (848/01) and one SMS in Maramingo FMB (878/16)
r	<i>Pittosporum revolutum</i>	36	Well represented in parks, SPZ and SMZ in the far east and recorded from a range of EVCs. Other records further west are in park.
r	<i>Plectorrhiza tridentata</i>	35	Well represented in parks, SPZ and SMZ in the far east and recorded mainly from WTR and RF. All SF records further west are in SPZ or SMZ.

	Species	No. of records	Comments / protection measures
Category 2 continued			
r	<i>Poa</i> aff. <i>tenera</i> (hairy)	2	Both records are from SF, one in SPZ in Maramingo FMB (878/10) and one SMS in Drummer (874/06).
r	<i>Pomaderris discolor</i>	13	All SF populations protected by SPZ, SMZ and SMS.
r	<i>Pomaderris oraria</i> ssp. <i>calcicola</i>	8	Only one population in SF, protected in SPZ along Hospital Creek (802/5).
r	<i>Pomaderris virgata</i>	3	All in SPZ in Goongerah FMB (891/04 and 891/07)
r	<i>Pterostylis aestiva</i>	7	Only one SF population, protected by SMS in Dellicknora FMB (902/05)
r	<i>Pterostylis fischii</i>	4	Three populations in park, one in SF in SPZ of Ellery FMB (841/01)
r	<i>Pterostylis grandiflora</i>	4	SF populations in SMZ in Hartland FMB and two SMS in Tildesley (802/04) and Waygara (823/11) FMBs
r	<i>Pultenaea capitellata</i>	2	One SF record along Delegate R. near Gap Rd in SMS (890/9). The other record is in park.
r	<i>Ripogonum album</i>	24	Mostly recorded in rainforest in the east; all SF records protected by SPZ, SMZ and buffers. One SMS at edge of range in Purgagoolah FMB (833/04)
r	<i>Scutellaria mollis</i>	22	Recorded in a range of EVCs (mostly riparian) in the east. All SF records protected by SPZ, SMZ, SMS and streamside buffers
r	<i>Sticherus flabellatus</i>	22	All SF populations in SPZ of Binns (848/1) and Stoney Peak (853/3) FMBs
r	<i>Viola caleyana</i>	13	All SF populations protected by SPZ, SMZ and one SMS in Bowen FMB (901/1)
r	<i>Zieria smithii</i>	32	Well represented in parks, SPZ and SMZ in the far east. All SF populations further west in SPZ and one SMS in Noorinbee FMB (872/10)
Category 3 Rare in Victoria but unlikely to be threatened in State forest			
r	<i>Acrotriche leucocarpa</i>	24	SF records mostly in Yalmy and Goongerah FMBs and well represented in park, SPZ and SMZ
r	<i>Almaleea paludosa</i>	7	All records in heath or WTR. SF populations protected by SPZ, SMZ and buffers
r	<i>Baeckea linifolia</i>	55	Mostly recorded in heath and well represented in park, SPZ and SMZ in the east
r	<i>Cyathochaeta diandra</i>	36	Recorded in a range of EVCs of the south-east. Well represented in parks, SPZ and SMZ
r	<i>Dendrobium striolatum</i>	25	Protected by habitat near rocky outcrops and clifftops
r	<i>Eucalyptus agglomerata</i>	40	Good examples protected by SPZ and SMZ in Maramingo, Martins Ck and Yalmy FMBs
r	<i>Juncus</i> sp. (1) sensu L. Johnson	6	All records from montane heathlands/sedgelands in Errinundra NP and one SF population in SPZ along Delegate River (890/03)
r	<i>Leptomeria acida</i>	41	Recorded mostly from Stoney Peak and Genoa FMBs and well represented in park, SPZ and SMZ
r	<i>Lindsaea microphylla</i>	33	Recorded from a range of EVCs in the central and eastern parts of the FMA. Well represented in park, SPZ and SMZ. Many records from roadside cuttings and landings

Species	No. of records	Comments / protection measures
Category 3 continued		
r <i>Lomandra longifolia</i> spp. <i>exilis</i>	16	Recorded from a range of EVCs. Well represented in park, SPZ and SMZ. All locations are within Clinton and Tamboon FMBs
r <i>Oxylobium ilicifolium</i>	56	Locally common; recorded in a range of EVCs in the north-east. Well represented in parks, SPZ and SMZ throughout its range
r <i>Pimelea biflora</i>	14	Recorded in a range of EVCs and most SF populations are in the Brodribb FMB. Well represented in Errinundra and Alpine NP and SPZ and SMZ in SF
r <i>Poa hothamensis</i> var. <i>parviflora</i>	15	All records from a range of EVCs in Martins Creek and Yalmy FMB. Well represented in SPZ and SMZ
r <i>Poa meionectes</i>	91	Moderately common in central and eastern part of the FMA in a range of EVCs. Well represented in parks, SPZ and SMZ throughout its range
r <i>Poranthera corymbosa</i>	11	Well represented in parks, SPZ and SMZ in Stoney Peak and Genoa FMBs
r <i>Pultenaea polifolia</i>	10	One record on private land, rest in SF in areas of low timber value in Sardine FMB. Majority in SPZ
r <i>Stackhousia nuda</i>	21	All records from heathlands and all SF populations protected by SPZ and SMS
r <i>Tasmannia</i> sp. (Errinundra Plateau)	88	Well represented in Errinundra NP and SPZ and SMZ of upper Brodribb and Bemm Rivers
r <i>Tmesipteris ovata</i>	42	Recorded only in rainforest patches in the central and eastern part of the FMA. Well represented in parks, SPZ and SMZ. Protected by rainforest buffers
r <i>Uncinia</i> sp. B (aff. <i>rupestris</i>)	117	Recorded mostly in rainforest throughout the FMA. Well represented in parks, SPZ and SMZ. Protected by rainforest and streamside buffers

APPENDIX I

REPRESENTATION OF OLD-GROWTH FOREST IN CONSERVATION RESERVES AND FOREST MANAGEMENT ZONES

Ecological Vegetation Class	Area (ha)	Proportion of EVC as Old Growth (%)	Representation (%)						
			Conservation Reserves	Forest Management Zone				Formal Protection*	
				SPZ	SMZ	GMZ timber	GMZ other		
			(a)	(b)				(a + b)	
21. Shrubby Dry Forest	88011	42	54	10	1	0	35	64	
29. Damp Forest	42746	18	44	17	4	26	9	60	
30. Wet Forest	36584	41	44	16	3	32	5	60	
14. Banksia Woodland	18337	50	60	18	2	0	20	78	
16. Lowland Forest	16485	7	62	9	9	19	1	71	
17. Riparian Scrub Complex	4392	25	42	57	0	0	0	99	
39. Montane Wet Forest	3327	25	87	2	0	11	0	89	
36. Montane Dry Woodland	2885	6	28	34	1	36	1	62	
27. Rocky Outcrop Scrub	2639	52	37	44	1	0	18	81	
26. Rainshadow Woodland	2392	11	100	0	0	0	0	100	
35. Tableland Damp Forest	2179	31	45	32	3	21	0	76	
2. Coast Banksia Woodland	1086	32	100	0	0	0	0	100	
20. Heathy Dry Forest	767	26	50	30	0	0	20	80	
28. Rocky Outcrop Shrubland	715	45	96	3	0	0	0	99	
18. Riparian Forest	521	4	24	54	6	9	7	78	
24. Box Ironbark Forest	377	63	0	78	0	1	20	78	
15. Limestone Box Forest	323	7	23	54	4	19	0	77	
1. Coastal Dune Scrub Complex	304	9	99	1	0	0	0	100	
38. Montane Damp Forest	275	2	97	0	0	2	0	98	
23. Herb-rich Forest	141	1	1	65	6	28	0	66	
43. Sub-alpine Woodland	54	1	53	42	0	0	5	95	
22. Grassy Dry Forest	54	0	93	7	0	0	0	100	
40. Montane Riparian Woodland	30	6	38	62	0	0	0	100	
4. Coastal Vine-rich Forest	22	18	100	0	0	0	0	100	
25. Limestone Grassy Woodland	7	1	100	0	0	0	0	100	
41. Montane Riparian thicket	3	9	100	0	0	0	0	100	
SUBTOTAL									
Old Growth Forest	224657		52	15	2	13	18	67	
Negligibly Disturbed Forest	285404		43	18	3	26	9	61	
Other**	541039		31	15	5	38	11	46	
Total Public Land			1051100	39	16	4	32	9	55

Sources: Woodgate *et al.* (1994) & GIS (1995). The "Other Public Land" category (0.5% of all public land) is not shown on this table. Consequently the representation levels do not total 100% for some EVCs.

* Formal protection is that provided by conservation reserves and the Special Protection Zone.

** Unclassified vegetation. Water bodies not included in this analysis

APPENDIX J

MANAGEMENT OF THREATENED AND SENSITIVE FAUNA

J1. Species with conservation guidelines in State forest (see Section 3.4)

Species	Status*	Species	Status*	Species	Status*
Mammals		Birds		Fish	
Long-footed Potoroo	End,L,F,E	Powerful Owl	R/R	Yellow-fin Bream	L
Spot-tailed Quoll	Vul, F	Masked Owl	R/R, F	River Blackfish	Ins
Koala	D	Sooty Owl	R/R, F	Mountain Galaxias	Ins
Common Brush-tail		Square-tailed Kite	Vul,D,B	Spotted Galaxias	R/R, L
Possum	S1	Grey Goshawk	R/R	Pouched Lamprey	R/R, L
Eastern Pygmy-possum	S1	White-bellied Sea-Eagle	R/R,F,B	Striped Gudgeon	R/R
Greater Glider	S2	Peregrine Falcon	S2	Cox's Gudgeon	Vul, F
Yellow-bellied Glider	S2	Little Falcon	S2	Australian Bass	R/R
Eastern Horseshoe-bat	R/C, L	Glossy Black-Cockatoo	Vul, D	Freshwater Herring	End, F
Yellow-bellied		Frogs		Australian Grayling	Vul, F, V
Sheath-tail-bat	Ins, L	Giant Burrowing Frog	Vul,F	Invertebrates	
Common Bent-wing Bat	R/C, F	Southern Barred Frog	End,L,F	Orbost Crayfish	Vul,L,F
Large-footed Myotis	R/R	Blue Mountains		<i>Engaeus malleocoota</i>	R/R, L, F
Eastern Broad-nosed Bat	F	Tree Frog		<i>Euastacus crassus</i>	R/R, L
Dingo	Ins	Reptiles			
		Diamond Python	Vul, L,F		

*Status:

Status of Victorian rare or threatened species (CNR 1995a)

End = Endangered; Vul = Vulnerable; R/R = Rare; R/C = Restricted colonial, breeding or roosting sites; Ins = Insufficiently known. Suspected of being End, Vul, R/R or R/C; F = Listed under the *Flora and Fauna Guarantee Act 1988*

Significance status from AHC/CNR joint national estate project

L = species at the limit of its distribution range in FMA; D = species has disjunct occurrences in FMA; B = important wildlife breeding sites

Sensitive species (ABRG 1985, Lugg *et al.* 1993)

S1 = population will be decreased by timber harvesting, but will use regrowth and therefore persist at the site; S2 = population will be severely reduced by timber harvesting and will not use regrowth, therefore unlikely to persist at the site

Commonwealth Endangered Species Protection Act 1992

E = endangered; V = vulnerable

A number of threatened species which occur in East Gippsland do not have specific conservation guidelines in this plan. This is because:

- their habitat is all or mostly within national parks and conservation reserves (e.g. Brush Tailed Rock Wallaby, Eastern Bristlebird, Little Tern and Hooded Plover)
- they are adequately catered for by other strategies in this plan (like old-growth forest, EVC representation, linear reserves)
- only a small part of their habitat is within State forest and these areas are within forest types not subject to harvesting or non-forested vegetation types (e.g. Swift Parrot and Regent Honeyeater)

Table J2 lists species in the FMA that whose requirements are generally covered by other conservation strategies:

J2. Species without specific conservation guidelines in State forest

Species	Status*	Species	Status*	Species	Status*
<u>Mammals</u>		<u>Birds</u>		<u>Reptiles</u>	
Brush-tailed Rock Wallaby	End, D, L, V			Common Scaly-foot	D
Bobuck	S1	Black Bittern	R/R, L	Mountain Dragon	Ins, L
Feathertail Glider	S2	Australian Bittern	Ins	Gippsland Water Dragon	L
Sugar Glider	S2	King Quail	R/R, D	Copper-tailed Skink	D, L
Grey-headed Flying-fox	R/C, B	Lewin's Rail	R/R	Swamp Skink	R/R, D
Little Red Flying-fox	B	Little Tern	End, F, E		
White-striped		Hooded Plover	Vul, V, V		
Mastiff Bat	S1	Peaceful Dove	D	Cunningham's Skink	L
Gould's Wattled Bat	S2	Red-capped Robin	L	Three-toed Skink	L
Chocolate Wattled Bat	S1	Yellow-tailed		Coventry's Skink	S1
Large King River Bat	S1	Black-Cockatoo	S2	Glossy Grass Skink	Ins, L
Forest Bat	S1	Gang Gang Cockatoo	S2	Red-throated Skink	L
Little Forest Bat	S1	Australian King Parrot	S2	Bougainville's Skink	D, L
Lesser Long-eared Bat	S1	Ground Parrot	R/R, F	Alpine Water Skink	Vul, D, L, F
Gould's Long-eared Bat	S1	Swift Parrot	End, D, F, V		
Great Pipistrelle	S2				
Broad-toothed Rat	R/R	Blue-winged Parrot	L		
Smoky Mouse	Vul	Turquoise Parrot	R/R, D, F		
		Barking Owl	R/R	<u>Invertebrates</u>	
<u>Frogs</u>		Australian		<i>Engaeus laevis</i>	D, L
Large Brown Tree Frog	R/R, L	Owlet-nightjar	S1	<i>Engaeus orientalis</i>	L
Green & Golden Grass Frog	L	Rainbow Bee-eater	D	<i>Engaeus quadrimanus</i>	L
Growling Grass Frog	L	Spangled Drongo	L	<i>Euastacus bidawalus</i>	L
Eastern Banjo Frog	D, L	Double-barred Finch	D, L	<i>Euastacus kershawi</i>	L
Southern Toadlet	L	Hooded Robin	D		
Martin's Toadlet	Ins	Crested Shrike-tit	S1		
Tyler's Toadlet	Ins	Black-faced Monach	L		
		Eastern Bristlebird	End, L, V		
		Large-billed Scrub wren	S1		
		Weebill	D		
		Brown Gerygone	L		
		Red-browed Treecreeper	S1		
		Brown Treecreeper	S2		
		Regent Honeyeater	End, E		
		Scarlet Honeyeater	L		

The aim of the conservation guideline for large forest owls is to provide secure habitat for at least 100 pairs the three large forest owl species in the FMA (See Section 3.4). Application of this guideline has made a major contribution to creation of Special Protection and Special Management zones in State forest. The target of 100 pairs has been apportioned to geographic representation units according to the relative area of suitable habitat in each unit. Tables J3 and J4 illustrates how the strategy has been applied

J3. Targets for conservation of large forest owls

P&R is the number of pairs catered for by national parks & conservation reserves, SF is the number of pairs catered for by Special Protection and Special Management zones in State forest.

Geographic Representation Unit	Powerful Owl				Sooty Owl				Masked Owl			
	Target (a)	P&R (b)	SF (c)	Total (b+c)	Target (a)	P&R (b)	SF (c)	Total (b+c)	Target (a)	P&R (b)	SF (c)	Total (b+c)
1. Far East Foothills	14	9	7	16	14	8	10	18	8	3	7	10
2. Far East Coastal	17	10	6	16	20	13	7	20	37	18	16	34
3. Cann Foothills	13	2	9	11	16	3	9	12	1	0	5	5
4. Bemm-Brodribb Coastal	5	4	6	10	6	2	9	11	15	6	10	16
5. Errinundra Tablelands	12	3	7	10	9	6	5	11	4	2	2	4
6. Brodribb Foothills	13	6	17	23	17	8	24	32	1	0	6	6
7. Snowy-Deddick Rainshadow	3	3	0	3	1	1	0	1	5	5	0	5
8. Snowy River Valley	10	8	0	8	9	7	0	7	1	1	0	1
9. Upper Buchan Foothills	4	2	5	7	1	0	2	2	6	3	3	6
10. Orbest-Buchan Foothills	7	1	8	9	4	0	9	9	8	0	4	4
11. Lake Tyers-Corringle Coastal	2	4	3	7	3	4	4	8	14	6	6	12
TOTAL	100	52	68	120	100	52	79	131	100	44	59	103

Table J4 lists the larger Special Protection and Special Management zones, and aggregations of zones, that have been 'counted' towards meeting the conservation guideline for large forest owls in State forest (see section 3.4). It should be read in conjunction with Map 26. Some zones are known to support the species (Sites) while others are judged to contain good quality habitat (Habitat) for the specified number of pairs.

J4. Forest management zones contributing to owl conservation targets.

Forest Block	Zone numbers (see Map 26)	Number of owl pairs					
		Powerful Owl		Sooty Owl		Masked Owl	
		Sites	Habitat	Sites	Habitat	Sites	Habitat
UNIT 1. FAR EAST FOOTHILLS							
Binns	SPZ (848/01)	1		3			
Maramingo	SPZ (878/02), Maramingo Flora Reserve	1		1			1
	SPZ (878/07, 878/10), SMZ (878/05, 878/14)	1				1	
	SMZ (878/1)			1		1	
	SPZ (878/11, 877/01)		1			1	1
Cooagalah	SPZ (875/02, part 875/04)			1			
	SPZ (875/06, 876/03)	1			1		
Drummer	SPZ (874/05, 874/02, part 860/06 - Thurra River)	1			1		1
	SPZ (874/01, part 860/06 - Thurra River)			1			
Reedy	SPZ (873/01)	1		1			1
Subtotal		6	1	8	2	3	4

J4 continued.

04 continued.

Forest Block	Zone numbers (see Map 26)	Number of owl pairs					
		Powerful Owl		Sooty Owl		Masked Owl	
		Sites	Habitat	Sites	Habitat	Sites	Habitat
UNIT 2. FAR EAST COASTAL							
Stony Peak	SPZ (853/02, part 853/13, adjacent Park)	1			1		
	SPZ (853/04, part 853/13, part 853/05)						1
	SMZ (853/01, 853/07), SPZ (part 853/03, part 853/05)	1					1
East Wingan	SPZ (854/01, part 853/05)	1		1			1
	SMZ (854/07), SPZ (part 854/03)						1
	SPZ (854/02, 858/03, 876/10, part 854/04 - Wingan River)				1	1	
Jones	SPZ (877/03, 878/06, part 877/04), SMZ (877/02)		1		1	1	1
Buckland	SPZ (876/04, part 854/04 - Wingan River), SMZ (876/05)					1	
	SPZ (876/06, part 876/08), SMZ (876/02)			1			
West Wingan	SPZ (858/02, part 854/04)						1
Everard	SPZ (860/03)						1
	SPZ (860/07)						1
	SPZ (860/04, part 860/06 - Thurra River)						1
Thurra	SPZ (862/01, 862/02)		1				1
Tamboon	SMZ (863/01)			1		1	
	SMZ (863/02), SPZ (863/10)				1	1	
	SMZ (863/03), SPZ (863/05)					1	
	SPZ (863/04, part 863/05)	1					
Subtotal		4	2	3	4	6	10
UNIT 3. CANN FOOTHILLS							
Tonghi	SPZ (864/01), adjacent Education Area		1				2
	SPZ (864/02)				1		
Noorinbee	SMZ (872/01)	1					
Cobon	SPZ (885/01, part 885/04)				1		
Dinah	SPZ (867/01, part 834/06), Bemm River Scenic Reserve	1			1		1
West Errinjundra	SMZ (837/01), SPZ (837/06), Kanuka Creek Flora Reserve			1			
Lockup	SMZ (884/01, 884/02, 884/05), SPZ (part 884/03, 884/04)	1		1			
Sisters	SPZ (887/01)		1		1		
Buldah	SPZ (888/07, 883/02, 883/01)		2				1
Tennyson	SPZ (889/01, 889/08), Little Bog Ck Flora Reserve, Tennyson Ck Flora Reserve	1		1			1
	SPZ (889/02, 889/03, 889/04, 889/05, 889/07)	1			2		
Subtotal		5	4	3	6	0	5

J4 continued.

Forest Block	Zone numbers (see Map 26)	Number of owl pairs					
		Powerful Owl		Sooty Owl		Masked Owl	
		Sites	Habitat	Sites	Habitat	Sites	Habitat
UNIT 4. BEMM - BRODRIBB COASTAL							
Little River Swamp	SPZ (866/07), St. Georges Plain Flora Reserve						1
	SPZ (866/08, 866/09)			1		1	
West Bemm	SMZ (834/05), SPZ (866/02, 866/06), Bemm River Scenic Reserve	1			3		
	SMZ (834/09, 834/12)					1	
	SMZ (834/01)				1		
Cabbage Tree	SMZ (832/02)		1	2			
Yeerung	SMZ (835/02), Cabbage Tree Flora Reserve	1	1	1	1	1	1
	SPZ (835/04), SMZ (835/03)		1			2	2
Murrungowarr	SPZ (829/08)		1				1
Subtotal		2	4	4	5	5	5
UNIT 5. ERRINUNDRA TABLELANDS							
Bonang	SPZ (893/02)		1				
Cottonwood	SPZ (895/01), SMZ (895/06, 895/07)			1			
	SPZ (895/02, 893/06), adjacent reserve		1				
Delegate	SPZ (890/01, 890/02, 890/08, part 890/06)	1					
	SPZ (890/06), Gap Scenic Reserve		1		1		
Queensborough	SPZ (892/01, 892/02, 892/03)	1		1			
	SPZ (892/04, 892/08, 892/13, 894/04)		1		1		1
East Errinundra	SPZ (843/05), SMZ (843/01), adjacent park	1			1		
Coast Range	SPZ (894/02, 894/06)					1	
Subtotal		3	4	2	3	1	1
UNIT 6. BRODRIBB FOOTHILLS							
Brodribb	SPZ (840/04, 891/06, 891/05), SMZ (840/08) + adjacent Park		1		1		
	SMZ (840/01) + adjacent Park			1			
	SPZ (840/02), SMZ (836/03)				1		1
Ellery	SPZ (841/01)		1			1	
	SPZ (841/02, 841/05)				1		
Goolengook	SPZ (839/01)		1	2			
	SMZ (839/04, 830/03), SPZ (part 839/01)	1		1			
Rich	SMZ (842/01), SPZ (842/07)		1		1		
	SPZ (842/08, part 842/16), SMZ (842/03)		1		1		
Sardine	SPZ (844/02)		2	2			
	SPZ (844/05, 844/07, 845/01, 846/01, 846/05, 897/01)	1	1		2	1	
Yalmy	SPZ (846/02, 846/05), SMZ (846/09)		1	1			

J4 continued.

J4 continued.

Forest Block	Zone numbers (see Map 26)	Number of owl pairs					
		Powerful Owl		Sooty Owl		Masked Owl	
		Sites	Habitat	Sites	Habitat	Sites	Habitat
UNIT 6. BRODRIBB FOOTHILLS continued							
Martins Creek	SPZ (836/04, part 829/16), SMZ (836/06, 842/04, 842/10, 844/3), + Sardine Creek Education Area.	1			1		
	SPZ (836/05, 836/11, 836/12, 836/13, part 826/16 - Brodribb River.	1	1	1	2		1
Ada River	SPZ (838/02, 843/04 - Errinundra River), SMZ (838/01)		1		1		1
Murrungowarr	SPZ (829/04) + Brodribb Flora Reserve						1
Kuark	SMZ (830/2, 830/09), SPZ (833/08)				1		
Jirrah	SMZ (831/01)			1			
Cabbage Tree	SMZ (832/04), SPZ (part 832/03)	1		1			
Purgagoolah	SMZ (833/02, 833/06), SPZ (part 833/07, part 833/08)		1		1		
Subtotal		5	12	11	13	2	4
UNIT 7 SNOWY - DEDDICK RAINSHADOW		0	0	0	0	0	0
UNIT 8 SNOWY RIVER VALLEY		0	0	0	0	0	0
UNIT 9 UPPER BUCHAN MOUNTAINS							
Timbarra	SPZ (814/01)		1				
	SPZ (814/05)		1	1			
Statham	SPZ (816/01)						1
	SPZ (816/05, 816/07, 816/08, 816/09, 816/12)	1			1		
Mundy Plain	SPZ (817/01)		1				1
Seldom Seen	SPZ (818/01)		1				1
Subtotal		1	4	1	1	0	3
UNIT 10 ORBOST - BUCHAN FOOTHILLS							
Dawson	SPZ (812/01)	1	1	1	2		
Kenny	SPZ (808/01)		1		1		1
Boggy	SPZ (803/02), Boggy Creek Flora Reserve		1				1
Hospital	SPZ (805/01)	1		1		1	
Bete Bolong	SPZ (824/01)		1		1		1
Loongelat	SPZ (825/01, 825/02, 825/03, 825/06, 825/08)		2		3		
Subtotal		2	6	2	7	1	3
UNIT 11 LAKE TYERS-CORRINGLE COASTAL							
Colquhoun	SPZ (801/01)		1	1		1	
	SPZ (801/02)				1		1
Tildesley	SMZ (802/01), SPZ (802/05)	1				2	
Hartland	SMZ (826/01)		1	1		2	
	SPZ (826/02), SMZ (826/05)			1			
Subtotal		1	2	3	1	5	1

APPENDIX K

PLAN FOR SPECIAL MANAGEMENT ZONE NO 832/4-CABBAGE TREE FOREST BLOCK

Featured Species

Powerful Owl
Sooty Owl

Area of SMZ:

715 ha (plus approximately 90 ha of SPZ 832/3).

Background:

Individuals of both the Sooty and Powerful Owls have been regularly recorded over several years in unlogged forest off Towser Creek Track. The surrounding landscape has a long history of intensive logging and relatively few areas of older forest remain, except in gullies.

The vegetation of the area comprises Lowland Forest dominated by Silvertop and stringybark species on the ridges and upper slopes, Wet Forest and Damp Forest dominated by Mountain Grey Gum and Messmate on the lower slopes and in most gullies and small areas of Warm Temperate Rainforest and Riparian Forest in the most sheltered gullies and on the major creeks. The best habitat for the Sooty and Powerful Owls is on the lower slopes and in the gullies where prey density is likely to be highest. Large trees with hollows suitable for nesting will also tend to be in the gullies.

Objective in the SMZ

Maintain resident Powerful and Sooty Owls in the SMZ.

Management Guidelines for SMZ 832/4 (Refer to Map 25)

1. At least 40% of the SMZ (320 ha) will remain unharvested. Unharvested areas will be Riparian Forest, Rainforest and Damp Forest in gullies and adjacent to creeks as well as the block of unharvested forest where the owls have regularly been observed. The unharvested forest is to comprise larger clumps linked by linear reserves.
2. Other smaller strips and patches of unlogged forest within and between coupes will contribute to habitat values but will not be counted in the 40% retention target. Thus the area of unharvested forest will exceed 40%.
3. About 170 ha will be available for harvesting under the prescriptions indicated. Thus the total area which will retain high or moderate habitat value for the featured species will be about 490 ha.

Coupe Management Guidelines for SMZ 832/4

Nine coupes (about 170 ha) are available for harvesting in the SMZ. About 30% of the area of the SMZ has already been harvested over the last 20 years. The principle harvesting method was clearfell with seed trees and habitat trees retained followed by a hot slash burn to create a receptive seed bed.

In all future coupes in the SMZ the following guidelines will apply:

1. 30-50% of overwood will be retained on coupes.
2. Trees containing sawlogs should be harvested as first preference. Trees which do not contain sawlogs (including cull trees) should be retained up to the target for overwood retention, with a preference towards those which are reasonably healthy and likely to survive for many decades. However old trees, particularly those with abundant hollows, generally have high present and shorter term habitat value and should also be retained.
3. Cull trees which are a hazard to contractors may be felled.
4. Retained trees can be in clumps and can also contain stands of advanced regrowth.
5. Harvesting should be more intense on ridges and upper slopes and progressively less intensive towards gullies.
6. Gum and Messmate should be retained in preference to Silvertop and Stringybark.
7. Post harvesting treatment of the coupe can comprise limited slash burning where there is a concentration of tree heads, a low intensity extensive burn in other harvested areas or mechanical disturbance where burning is not feasible or is likely to damage retained trees.

Monitoring of the SMZ

1. A monitoring program to assess the persistence of Powerful and Sooty Owls in the SMZ is to be initiated.
2. A monitoring program to assess regeneration in selectively logged coupes will be established.
3. A monitoring program to measure survival of retained trees is to occur.

APPENDIX L

CONTRIBUTION OF THE SPECIAL PROTECTION ZONE TO PROTECTION OF EXTENSIVE NATIONAL ESTATE AND OLD-GROWTH FOREST VALUES

SPZ Site no. ²	Locality	Predicted flora or fauna richness	Place important for succession	Refuge- dependant EVC	Natural Landscape ²	Old- growth forest values
803/07	Breakfast Creek	Fauna				
805/01, 821/03	Hospital Creek; Waygara FMB					OG, ND
808/01	Timbarra River; Kenny FMB		X	X	X	OG, ND
812/01	Dawson Range		X		X	OG, ND
814/01,05	Ah Chow Creek; Timbarra River		X	X		OG, ND
829/04, 08	Rocky River (lower); Murrungowar FMB	Flora				OG
833/16	McKenzie River near Princes Highway	Flora and fauna				
836/04, 05, 11, 12, 13	Martins Creek FMB		X		X	OG, ND
839/01	Goolengook FMB					OG
840/02, 841/01	east of Goongerah				X	OG, ND
841/02	Ellery FMB				X	OG, ND
842/08	Rich FMB			X	X	ND
845/01, 846/01	Tabby/Snowy FMB				X	OG, ND
853/02	Stony Peak FMB		X			
858/02	Wingan River to Alfred NP	Flora and fauna				
860/03	Thurra River to Alfred NP	Flora and fauna				
860/04	Thurra River (lower)	Flora and fauna				
862/02	Granite Creek	Fauna				
864/01	Tonghi FMB		X		X	OG, ND
866/07	Saint Georges Plain	Flora and fauna				
871/03	Pyramid Hill	Flora				
873/01	Reedy Creek to Thurra Junction Road	Flora and fauna				
874/01	Thurra FMB					OG, ND
874/02	Thurra River					OG
875/06	Cooagalah					OG, ND
877/03	Genoa Creek	Flora and fauna				
885/01	Bungywarr Creek		X	X		OG
887/01	Three Sisters					OG, ND
889/01, 02	Cann River headwaters; Tennyson Creek		X		X	OG, ND
890/06	Gap Road					OG
892/08, 13, 894/04	Queensborough/Back Creek					OG, ND
892/13	Boggy Creek	Fauna		X		
895/02	Bonang-Bendoc Road					OG, ND

Sources: Woodgate *et al.* (1994), AHC and CNR (in prep).

Notes:

1. This table is not comprehensive. It simply provides an indication of the larger SPZs contributing to conservation of national estate and old growth forest values. Many other areas also contribute.

2. These sites are indicated on Map 26 and have many additional values, see Appendix B.

3. These sites include substantial areas identified as Natural Landscapes by the joint AHC/CNR review of national estate values (AHC and CNR in prep).

Abbreviations: OG = old-growth forest

ND = negligibly disturbed forest

FMB = Forest Management Block

NP = national park

APPENDIX M

AREAS AND VOLUMES AVAILABLE FOR SPECIAL MANAGEMENT TIMBER PRODUCTION

M1. Area available for timber production by forest type and age

Year	Net productive area of each forest type (ha)					Total
	Alpine Ash	Mountain Ash and Shining Gum	Mountain mixed species	Foothill mixed species	Coastal and alpine mixed species	
Mature/overmature	767	797	47 467	101 924	74 722	225 677
Regrowth:						
1915	0	0	38	0	0	38
1925	52	30	556	1 210	0	1 848
1935	395	7	2 082	1 388	41	3 913
1945	42	0	459	29	38	568
1955	0	0	1 450	2 623	746	4 819
1965	122	128	4 129	9 367	11 026	24 772
1975	1 663	750	6 900	9 905	7 378	26 596
1985	1 283	558	13 612	18 943	12 841	47 237
1995	263	68	4 437	3 410	1 179	9 357
Total regrowth	3 820	1 541	33 663	46 875	33 249	119 588
Regrowth as percentage of NPA	83	66	41	32	31	35
TOTAL NPA	4 587	2 338	81 130	148 799	107 971	344 825

M2. Total net productive area and sawlog volumes by management zones

Management Zone	Net productive area (ha)			Mature / overmature volume (cu.m of C+)		
	Regrowth	Mature / overmature	Total	High yield	Low yield	Total
General Management	115 959	216 663	332 622	2 527 522	2 410 183	4 937 705
Special Management	6 375	16 031	22 406	203 162	151 951	355 113
Special Protection	11 678	45 529	57 207	635 927	493 547	1 129 474
TOTAL	134 012	278 223	412 235	3 366 611	3 055 681	6 422 292

Source: HARIS (1993), GIS (1995)

- Note:
1. Area refers to the net productive area (NPA) of the GMZ and approximate area estimated to be available in the SMZ
 2. High yield = estimated sawlog volume > 40cu.m C+/ha; Low yield < 40cu.m C+/ha.

APPENDIX N

FUEL-REDUCTION BURNING IN THE SPECIAL PROTECTION AND SPECIAL MANAGEMENT ZONES

This table indicates how the overlap between priority 1 and 2 burning zones and the Special Protection (SPZ) and Special Management Zones (SMZ) will be managed.

Forest Management Block	Overlapping zones (FMA/Fire)	Site no.	Key features	Management constraints
Bete Bolong	SPZ/P2	824/01	Rainforest	Exclude burns from rainforest with suitable lighting pattern
Loongelaat	SPZ/P2	825/01 825/08	Koalas	Ridgeline burning only. Riparian habitat unlikely to be affected
Hartland	SMZ/P1	826/01	Square-tailed Kite nesting site	Autumn burns only to avoid disturbance during breeding
Murrungowar	SPZ/P2	829/02	Lowland Forest	None. Anticipated low burning frequency
Murrungowar	SPZ/P2	829/08	Old-growth forest (Banksia Woodland)	Strategically important burning corridor. Monitor effects on Banksia Woodland
Kuark	SPZ/P2	830/08	Rainforest sub-catchments	Designated corridors impractical to burn and will be shifted to the south
Cabbage Tree, West Bemm, Martins Creek, Rich, and Sardine	SMZ/P2	832/02 834/01 836/03 842/04 844/03 830/02	Long-footed Potoroo Special Management Areas	Exclude burns from core zones by adopting a suitable lightning pattern
Cabbage Tree	SMZ/P2	832/05	Silvicultural Systems Project	Consultation with Eastern Research Centre
Martins Creek	SMZ/P2	836/07	Herb-rich Forest	Burn on a 10-15 year frequency
Brodribb	SPZ/P2	840/02	Shrubby Dry and Herb-rich Forest	Low fuel accumulation rates. Fire frequency unlikely to be less than 10 years
Brodribb	SMZ/P2	840/08	Grassy Dry Forest	Adjacent to private land with high priority fire protection
East Wigan and Stony Peak	SPZ/P2	854/01	Negligibly-disturbed forest (Lowland Forest); Sooty and Powerful Owl	Desired fire frequency approximately 15 years
Tamboon	SMZ/P2	863/01	Sooty and Masked Owl	None
Tamboon	SMZ/P2	863/02	Masked Owl; Riparian Forest	None
Little River and Dinah	SPZ/P2 SPZ/P2	867/01 866/02 866/03	Rainforest	Exclude burns from rainforest with suitable lighting pattern. Burn on a 10-15 year frequency
Reedy	SPZ/P2	873/01	Sooty and Powerful Owl; flora and fauna species richness	Burn heathland in accordance with heathland plan
Reedy	SMZ/P1	873/02	Herb-rich Forest; recreation, minor forest produce	Manage for all values. Detailed site planning required
Reedy	SMZ/P2	873/6	Research site	None

Forest Management Block	Overlapping zones (FMA/Fire)	Site no.	Key features	Management constraints
Drummer	SPZ/P2	874/01 874/02	Rainforest; Long-footed Potoroo; Tiger Quoll; Old-growth forest (Banksia Woodland)	Burn on a 10—15 year frequency
Buckland	SMZ/P2	876/05	Rich heathlands and associated values	None
Jones	SMZ/P2	877/02	Herb-rich Forest; Grassy Dry Forest	High priority for protection of private land
Maramingo	SPZ/P2	878/01	Masked and Sooty Owl; Old-growth forest (Riparian Forest)	Exclude burns from Riparian Forest by adopting a suitable lighting pattern
Maramingo	SPZ/P2	878/10	Big Flat Creek (Riparian Forest)	Exclude burns from creek vicinity by adopting a suitable lighting pattern
Maramingo	SMZ/P2	878/12	Glossy Black Cockatoo	Avoid frequent burning of <i>Casuarina</i> stands by adopting a suitable lighting pattern
Maramingo	SPZ/P2	878/06	Dry Rainforest	Well protected by steep, rocky topography
Weeragua	SMZ/P2	883/01	Tiger Quoll	Autumn burns only to avoid disturbance during breeding
Weeragua	SPZ/P2	883/02	Grassy Dry Forest	Burn on a 10-15 year frequency
Weeragua	SPZ/P2	883/04	Old-growth forest (Shrubby Dry and Lowland Forest)	Burn on a 10—15 year frequency
Buldah	SPZ/P2	888/02 888/07	Grassy Dry Forest; rich flora and fauna	Low fuel accumulation rates; unlikely to be burnt at less than 10-year intervals
Goongerah	SPZ/P2	891/06	Grassy Dry Forest	Burn on a 10-15 year frequency except area immediately adjacent to private land
Goongerah	SPZ/P2	891/05	Grassy Dry Forest	Low fuel accumulation rates; unlikely to be burnt at less than 10-year intervals
Queensborough	SPZ/P2	892/01 892/02	Powerful Owls	None
Queensborough	SPZ/P2	892/04 892/08 892/13	Old-growth forest (Montane Dry Woodland and Tableland Damp Forest)	Further investigation required
Bonang	SPZ/P2	893/02 902/05	Old-growth forest (Montane Dry Woodland, Montane Damp Forest, Montane Wet Forest)	None
Coast Range	SPZ/P2	894/04	Negligibly-disturbed forest (Montane Dry Woodland)	Further investigation required

Notes:

P1 = Priority 1 burning zone

P2 = Priority 2 burning zone

"None" in the management constraints means that the values and burning regime are compatible.

Appendix A provides a full list of the specific values of each SMZ and SPZ.

APPENDIX O

SCENIC DRIVE NETWORK AND LOOKOUTS

The views from the following scenic drives and lookouts (refer to Map 26) are to be managed in accordance with the Landscape management guidelines described in section 6.2.

Scenic drive	Sensitive landscape features and other values
Major thoroughfares and tourist roads	
Princes Highway (Lakes Entrance—Orbost)	Enclosed forest canopy between Nowa Nowa and Lakes Entrance; stream crossings at Hospital Ck, Hartland River and Simpson's Ck
Princes Highway (Orbost—NSW border)	Stream crossings at Brodribb River (rainforest) and Jungle Ck; forested hills seen from Cabbage Tree Ck; thinning operations between Cabbage Tree and Bemm River; enclosed forest canopy between Bemm River and Lind National Park; Mt Bemm; Donalds Knob; hills to south of Tonghi Creek; views north up the Cann Valley; views north-west from Mt Drummer
Buchan Road (Bruthen—Buchan)	Views west from Red Knob area; Pretty Sally; vegetation between roadside and SEC easement provides variety and reduces impact of easement; Fluke Knob; Spencer Knob; Lookout Rocks; Tara Range
Buchan—Jindabyne Road	NE (Road built in Great Depression). Mt Dawson; views from W-Tree to Dawson range (including Half Moon Gully, Mt Elephant, Lookout Top, Gum Top and Wagtail Ridge) and Mt Murrindal; Mt Statham; Mt Seldom Seen
Orbost-Buchan Road	NE (aesthetic quality)
Bonang Road (Orbost—NSW border)	Mt Buck/Cooney Ridge; Mt Watt; Mt Rich; views from Goongerah to Postmans Spur and BA ridge (Mt Ellery in background); Mt Little Bill; Brown Mountain; views from Bonang area to Mt Koolabra and Cottonwood Range; enclosed forest canopy and high quality roadside scenery along Pinch Swamp Ck
Gap Road	NE (Baldwin-Spencer journey); high-quality foreground scenery
Cann Valley Highway	Extensive views west across flats to forested range including Mt Noorinbee, High Peak, Cann Mountain, Morgan Hill and Bennet Knob, Mt Petterson
Mallacoota and Betka Roads	Access to Mallacoota, beaches and Croajingolong National Park
Mountain forest access	
Nunnett and Timbarra Roads	Alpine National Park access
Tulloch Ard Road	Snowy River National Park access
Seldom Seen Tower Road	Access to Mount Seldom Seen
Yalmy/Rising Sun/Pinnak Roads	Major access road to Snowy River National Park; forest vistas into catchments of Cavender Ck, Serpentine Ck, Yalmy River and Stony Ck
Deddick River Road (part)	
36-mile Road	Snowy River National Park access
Gunmark Road	Major access to Errinundra National Park; extensive views across Delegate River headwaters; buffers required where road forms border between the Park and State forest
Clarkeville Road	Errinundra National Park access
Bonang - Bendoc Road and Playgrounds Track	Day trips around Bendoc, Gold Mining, park access
Big River Road (part)	Mount Ellery access
Greens Road	Access to Errinundra National Park and St Patricks Falls; native forest management
Dellicknora / Cameron Roads	Tingaringy National Park access

Scenic drive		Sensitive landscape features and other values
Combienbar and Errinundra Rds (through to Gap Rd). Cool		NE (Baldwin-Spencer journey); Errinundra National Park access; hills around Club Terrace; Pyramid Hill; Shining Gums and Temperate Rainforest around Kanuka Creek; Tommy Roundhead Hill
Hensleigh Creek Road (part)		Errinundra National Park access; nocturnal birds and arboreal mammals
Coast Range Road (part)		Part of tall forest experience in Errinundra National Park; nocturnal birds and arboreal mammals
Foothill forest drives		
Colquhoun Forest Drive		Koalas; historic features associated with the Orbost—Bairnsdale railway
Nowa Nowa—Buchan Road Buchan		"The Gorge"; Mount Nowa Nowa; scenic alternative route to
Harris Creek/ 2-mile Road		Mount Nowa Nowa access
Cabbage Tree— Cape Conran Road, Marlo—Cabbage Tree Road and Palms Track		NE(Baldwin—Spencer journey); access to Cabbage Palms Flora Reserve
Murrungowar Forest Drive (Princes Hwy—Murrungowar Rd—Glen Arte Rd—Bendoc Ridge Rd—Princes Hwy)		Jungle Hill; Glen Arte Flora Reserve; regrowth thinning; side trips to Cabbage Tree Falls and St Patricks Falls; historic features around Murrungowar and Glen Arte
Jones Creek Road		Coopracambra National Park access
Betka Forest Drive		Mallacoota and Croajingalong access; native forest management
Wallagaraugh Road		
Wangarabell Road		
Coastal access		
Lake Tyers House Road		NE (Old Coach Road); Lake Tyers State Park access
Sydenham Inlet Road		Wide clearing maintained as strategic fire-break; view from township and inlet north to hills above township
Tamboon and Point Hicks Roads		Croajingolong National Park access; middle ground views near Furnell Landing
West Wingan Road		Croajingolong National Park access
Wallagaraugh Road		Croajingolong National Park access

Note:

The abbreviation "NE" indicates that the road alignment has been identified by the joint AHC/ CNR assessment as having national estate values on account of its historic or aesthetic qualities. (AHC & CNR in prep).

Key lookouts offering extensive views into State forest

Mount Nowa Nowa
Mount Stewart
Mount McLeod
Mount Seldom Seen
Mount Raymond
Mount Buck
Mount Bowen
Mount Tower
Mount Tingaringy

Delegate Hill
Mount Ellery
Gunmark lookout
Mount Beimm
Mount Denmarsh
Mount Kaye
Maramingo Hill
Genoa Peak

APPENDIX P

LIST OF INDIVIDUALS AND ORGANISATIONS MAKING SUBMISSIONS ON THE PROPOSED MANAGEMENT PLAN

Individuals and organisations who made submissions

Fred Ward	Deborah Schmetzer
Bob Semmens	Dr. M. M. Brandl
Margaret Files	Estelle McKenzie
Gail Sands	Royal Australian Ornithologists Union
Mr. & Mrs. R.L. Maxwell	Alan & Susan Robertson
East Gippsland Water	W Tree Progress Association
Lakes and Wilderness Tourism Board	Mr. Peter Sands
Geoff Mosely	Orbost and District Environment Group
Colin Smith	Hans Van der Sant
Mrs. Robyn Hermans	Victorian Association of Forest Industries
Goongerah Environment Centre	Neil Barraclough
Victorian National Parks Association	East Gippsland Timber Community Campaign
Office	
Orbost Women's Awareness Group	Land Conservation Council
Mr. & Mrs. LJ & GA Jessup	Central Gippsland Development Board
Bairnsdale & District Environment Group	Dandenong 4WD club
John Matthews	Cuthberts & Richards Sawmills P/L
Shire of East Gippland	East Gippsland River Management Board
East Gippland Regional Catchment	Monier PGH
and Land Protection Board	Victorian association of 4WD clubs
Peter & Jackie Hallam	Harris-Daishowa
Friends of Mallacoota (petition)	Australian Nature Conservation Agency
Federation of Victorian Walking Clubs	One anonymous submission

Groups briefed during the public comment period

Bendoc Progress Association	East Gippsland Regional Catchment
W Tree Progress Association	& Land Prot. Board
Orbost Womens Awareness Group	East Gippsland Forest Management
Victorian Council of Churches	Area Advisory Committee
Anglican Church (Melb. Diocese)	Commonwealth Government Agencies
Orbost Public Meeting	Orbost Rotary Club
Victorian National Parks Association	Federation of Victorian Walking Clubs
Bairnsdale & District Environment Group	Victorian Association of Forest Industries
Friends of Mallacoota	Timber Industry Liaison Committee
Moogji Aboriginal Council	Lakes & Wilderness Tourism Board
Students, Australian National University	East Gippsland River Management Board
Department of Forestry	Snowy River Improvement Trust
Orbost Secondary College	East Gippsland Shire Council