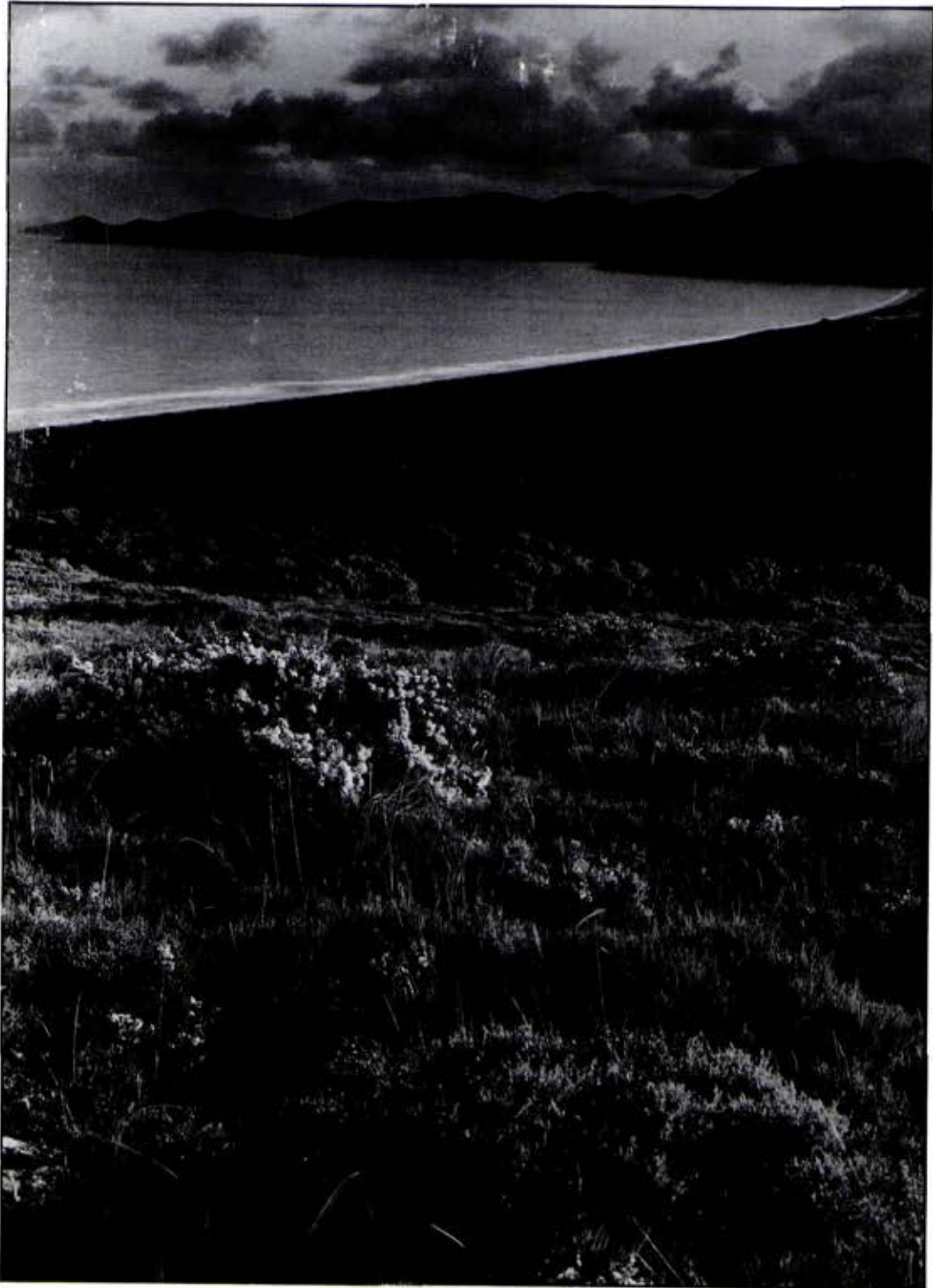


# WILDERNESS

SPECIAL INVESTIGATION

## PROPOSED RECOMMENDATIONS



**U.S. LAND CONSERVATION COUNCIL**

# **WILDERNESS**

**SPECIAL INVESTIGATION**

## **PROPOSED RECOMMENDATIONS**

**APRIL 1991**

### **LAND CONSERVATION COUNCIL**

Olderfleet Buildings  
First Floor, 477 Collins Street, Melbourne, Victoria 3000  
Phone: (03) 628 5142  
Fax No: (03) 628 5080  
ISBN 0-7241.9257.3

**Cover photograph:**

*Five Mile Beach, Wilsons Promontory*

Photo: David Tatnell

Printed on 100%-recycled paper

## Members of the Land Conservation Council

D.H.F. Scott, B.A. (Chairman)

R.W. Campbell, B.Vet.Sc., M.B.A.; Director - Natural Resource Systems, Department of Conservation and Environment (Deputy Chairman)

D.M. Calder, M.Sc., Ph.D., M.I.Biol.

W.A. Chamley, B.Sc., D.Phil.; Director - Fisheries Management, Department of Conservation and Environment

S.M. Ferguson, M.B.E.

M.D.A. Gregson, E.D., M.A.F., Aus.I.M.M.; General Manager - Minerals, Department of Manufacturing and Industry Development

A.E.K. Hingston, B.Behav.Sc., M.Env.Stud., Cert.Hort.

P. Jerome, B.A., Dip.T.R.P., M.A.; Director - Regional Planning, Department of Planning and Housing

M.N. Kinsella, B.Agr.Sc., M.Sci., F.A.I.A.S.; Manager - Quarantine and Inspection Services, Department of Agriculture

K.J.Langford, B.Eng.(Ag)., Ph.D , General Manager - Rural Water Commission

R.D. Malcolmson, M.B.E., B.Sc., F.A.I.M., M.I.P.M.A., M.Inst.P., M.A.I.P.

D.S. Saunders, B.Agr.Sc., M.A.I.A.S.; Director - National Parks and Public Land, Department of Conservation and Environment

R.P. Smith, B.Sc.F., M.B.A., Ph.D.; Department of Conservation and Environment

A.H. Teese, B.Agr.Sc., T.S.T.C.



## CONTENTS

	Page
<b>Introduction</b>	<b>1</b>
The Land Conservation Council	1
Wilderness Special Investigation	1
Issues Raised in Submissions	7
Development of the Proposed Recommendations	11
Proposed Recommendations - Overview	17
<b>General Recommendations</b>	<b>22</b>
<b>A   Wilderness Areas</b>	<b>23</b>
A1   Sunset	28
A2   Big Desert	31
A3   Big Desert - northern addition	31
A4   Big Desert - southern addition	31
A5   North Wyperfeld	34
A6   South Wyperfeld	34
A7   Avon	38
A8   Mt Darling/Snowy Bluff	40
A9   Razor/Viking	43
A10   Davies Plain	46
A11   Cobberas	49
A12   Buchan Headwaters	51
A13   Tingaringy	53
A14   Snowy River	56
A15   Bowen	56
A16   Genoa	59
A17   Sandpatch	61
<b>B   Other Areas with Remote and Natural Attributes</b>	<b>64</b>
B1   North Sunset	65
B2   South Sunset	66
B3   Mt Cowra	66
B4   Annuello	67
B5   Big Desert State Forest	67
B6   Victoria Range	67
B7   Serra Range	67
B8   Major Mitchell Plateau	67
B9   Baw Baw Plateau	68
B10   The Governors	68
B11   Macalister	68
B12   Dandongadale	68
B13   North Buffalo	68
B14   Bundara/Cobungra	69
B15   Bogong	69
B16   Mt Burrowa	69
B17   Timbarra Gorge	69
B18   Brodribb	70
B19   Mt Kaye	70
B20   Rame Head	70
B21   Cape Howe	70
B22   Vereker	70

	Page
Offshore Islands:	71
B23 Wilsons Promontory Islands	72
B24 Seal Islands	72
B25 Caves	72
B26 Trackless Areas	73
Excluded Candidate Areas	73
<b>C Principles of Management</b>	<b>75</b>
1. Existing Vehicular Tracks and Structures	76
2. Previous Utilisation Activity	81
3. Introduced Plants and Animals	84
4. Fire Management	88
5. Management of Specific Nature Conservation Values	92
6. Scientific Investigation and Study	93
7. Recreational Use	94
8. Other Forms of Direct Use	100
9. Cultural Associations	105
10. Air and Water Quality	106
11. Monitoring Indicators	107
Bibliography	107
<b>Appendices</b>	<b>110</b>
I List of Submissions	110
II National and International Definitions and Criteria	117
III Size and Shape as Indicators or Ecological Viability	120
IV Summary of Findings of Social and Economic Assessment Report	125
<b>Maps</b>	
1-12 Proposed Wilderness Areas	in text
A Proposed Recommendations	back pocket



# INTRODUCTION

## The Land Conservation Council

The Land Conservation Council was established by the *Land Conservation Act* 1970. One of its three functions as defined by the *Act*, is to carry out investigations for, and make recommendations to, the Minister for Conservation and Environment on the use of public land in order to provide for the balanced use of land in Victoria. In making its recommendations, Council is required to have regard to both the present and future needs of the people of Victoria in relation to the creation and preservation of areas of conservation and recreation value.

Council must also, under its legislation, have regard to the social and economic implications of its recommendations, and has taken the view that it must achieve a balance between community needs of public land as seen from local, regional, State, and national perspectives. As such, it provides for a whole range of uses on public land, including the harvesting of forest produce, grazing, apiculture, and mineral extraction.

## Wilderness Special Investigation

In August 1988, the government directed the Land Conservation Council to conduct a special investigation of wilderness in Victoria, in accordance with an Order in Council made under Section 8 of the *Land Conservation Act* 1970. The purpose of the investigation is to make recommendations on the identification, reservation and use of wilderness areas and other areas of high wilderness quality. The specific terms of reference of the investigation are outlined in Table 1.

The recommendations in this report apply solely to public land within Council's jurisdiction - that is, public land outside cities and rural cities. Council is not empowered to make recommendations for private land.

The Order in Council for this investigation requires that the Council's final recommendations be presented to government by 30 September 1991.

## Report Structure and Summary of Key Recommendations

The proposed recommendations are divided into three types: general, area specific, and principles of management.

The general recommendations (in the following chapter) concern the implementation of the specific recommendations made in the remaining chapters of this document (Chapters A, B and C).

The area specific recommendations relate to particular defined areas of higher wilderness quality. Chapter A identifies areas proposed to be wilderness areas. Chapter B identifies other areas of important wilderness related values across the State.

These proposed recommendations provide for 13 new wilderness areas in addition to the 2 wilderness areas it has previously recommended (see Chapter A). Together they encompass 709 700 ha or 3% of Victoria (8% of public land). In terms of existing land tenure, 96% of the land recommended as wilderness area is within existing national park, 3% is within existing State forest, and 1% within a flora and fauna reserve. Council has also recognised the remote and natural attributes of 22 other areas (see Chapter B).

Recommendations covering principles of management (Chapter C) relate specifically to the management of wilderness areas.

## Investigation Process

Notices announcing the commencement of the investigation were published in the Victorian Government Gazette, in State-wide and regional newspapers in August 1988. A seminar involving a cross-section of agencies, and interest groups was conducted using the theme 'Understanding and Investigating Wilderness' in October 1988.

In February 1990, the Council published the 'Wilderness Special Investigation Descriptive Report'. The report describes the concept of wilderness and its values, wilderness quality

Table 1

## TERMS OF REFERENCE

---

The Council's investigation will address the terms of reference below:

1. Identify:
    - \* those parts of Victoria that should be protected and managed as wilderness areas
    - \* other areas of high wilderness quality that should be protected
    - \* areas with potentially high wilderness quality subject to minor changes in management.
  2. Specify the uses that would be permitted and identify guidelines for management of these areas as well as adjoining land where this is considered necessary to protect wilderness quality.
  3. Recommend any additional requirements (including legislation) for the protection and management of wilderness.
  4. Take into account the economic and social implications and the environmental benefits of its recommendations.
  5. In making its recommendations, the Council is to have regard to the following attributes of wilderness:
    - \* remoteness from settlement
    - \* remoteness from access
    - \* aesthetic naturalness
    - \* biophysical naturalness
    - \* size
    - \* ecological viability
    - \* capability for appropriate recreational activities
  6. The Council is also to have regard to the following values of wilderness:
    - \* preservation and maintenance of ecological processes and natural gene pools
    - \* the opportunity for native species and ecosystems, which have their intrinsic values, to exist without human interference
    - \* opportunities for non-mechanised self-reliant forms of recreation, inspiration, and solitude in essentially natural environments
    - \* the existence value of wilderness to humans; although many people may never visit such areas, many derive satisfaction simply from knowing that wilderness exists.
- 

and the factors that influence it, the characteristics of areas of higher wilderness quality in Victoria, and the current and alternative land uses of such areas. The report provides a factual basis upon which members of the community could base their submissions to the Council.

A wide range of media organisations, libraries, parliamentarians, municipal councils, State government departments, and interested groups was notified of the availability of the report, with many also receiving a complementary copy. Copies were made available for viewing and

purchase in a number of city and country locations. A brochure describing the report was also prepared and widely distributed.

Submissions were sought for a period of 90 days following the publication of the report. In addition, formal briefings and discussions were held with relevant municipal councils as well as with major industry, recreation, and conservation groups. A general invitation was made for any person to contact the Council.

Prior to the formulation of these proposed recommendations, Council has sought additional resource information, inspected a



number of the areas of high wilderness quality with a range of values and potential conflicts, obtained the detailed comments of public land managers, and considered an independently prepared social and economic assessment.

These Proposed Recommendations have been published to enable public comment to take place. Submissions are now invited and will be forwarded to all Council members for their consideration. In addition, comments and issues raised during meetings with individuals and groups will be made available to Council members.

All submissions received by the Council are also available for public inspection at the Council's offices. Author confidentiality may be requested.

The remainder of the Investigation will closely follow the usual Land Conservation Council process, which is shown diagrammatically in Figure 1.

### **What is Wilderness?**

The concept of wilderness has evolved over a long period and many people and organisations have provided a range of definitions. The unifying theme of all such definitions has, however, been relatively consistent - a distinct environmental setting characterised by being remote and, more particularly, natural and essentially unmodified.

For the purposes of this report wilderness is defined as:

'a large area with landforms and native plant and animal communities essentially unaltered or affected by the influence of the European settlement of Australia'

### **Wilderness in Context**

The dominant observable cultural influences on Victoria's landscape arise from the activities of the predominantly European settlers and their modern technological society.

The most obvious change to the landscape is the dramatic decline of the area of naturally vegetated lands. For instance, analysis of Landsat images by Woodgate and Black in 1988 showed that while 88% of the State was estimated as being covered by forests and

woodlands in 1869, this had been reduced to 36% by 1972 (and to 35% by 1987). Most of these changes are the product of clearing as a result of alienation for agricultural development. Much of remaining naturally vegetated lands of the State have also been altered to varying extents, with gold mining and timber production being major contributors to change in particular areas. While all these land-uses formed the basis of an expanding Victorian economy in the nineteenth and twentieth century they have had a significant impact on the natural environment.

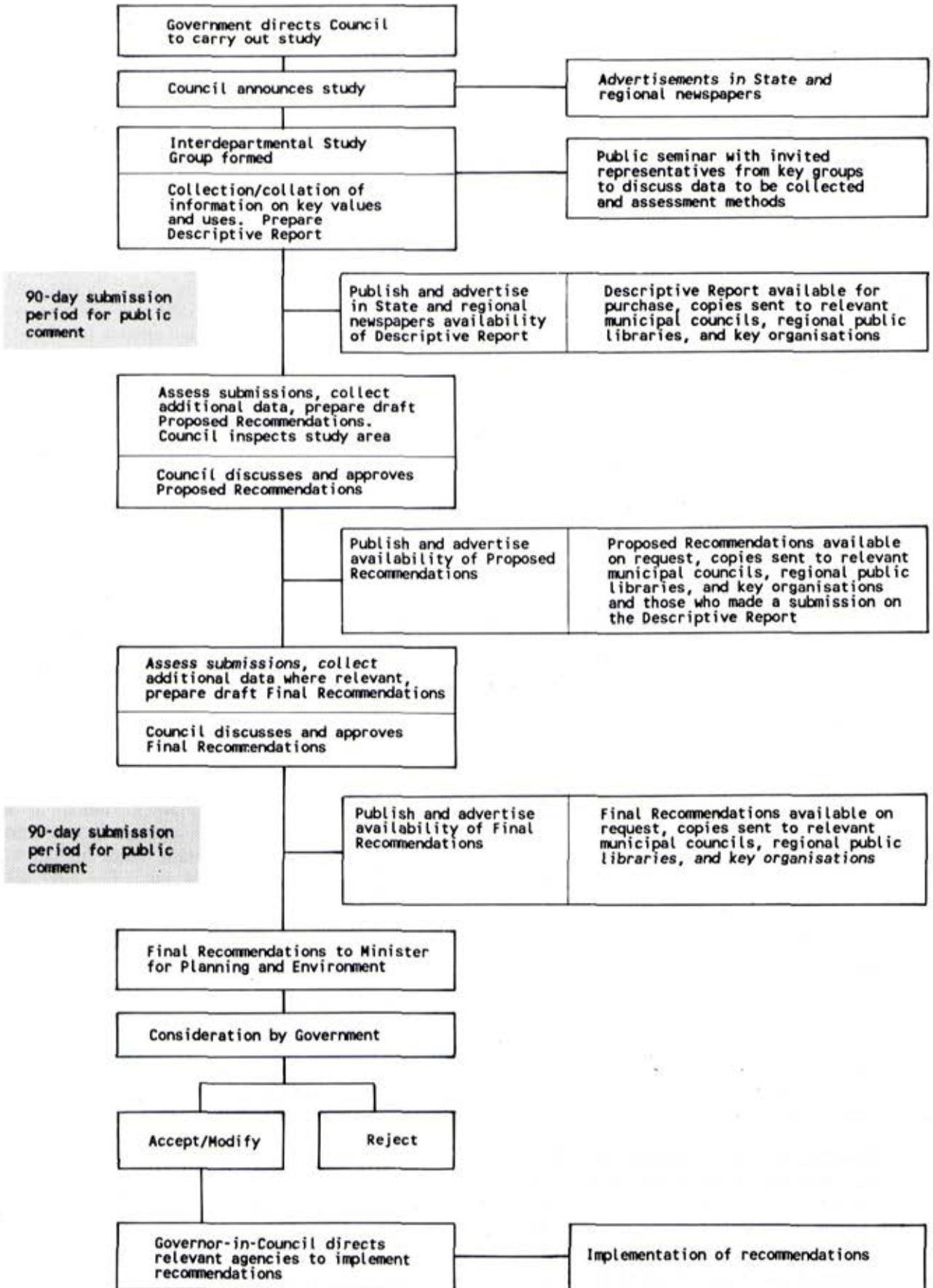
By the turn of the century the only remaining unsettled areas of the State were restricted to marginally productive areas of rugged terrain, extreme climate, poor soils, dense scrub and remote forest. However, following the destruction of extensive timber resources in the 1939 bushfires, and in particular after World War II as the population and demand for timber products rapidly increased, there was an expansion of settlement, roading and timber utilisation into the more remote parts of the State. Participation in many forms of outdoor recreation activity also grew rapidly and community based conservation groups became established.

In recent decades, there has been a growing awareness that the area of wilderness is limited and that a conscious effort was required if any wilderness was to be retained. Bushwalking groups were to the forefront of the concern about the diminishing areas of wilderness. Perhaps, as a result, in the 1970s the emphasis of interest in wilderness in Victoria was to retain large undisturbed settings for recreational use. The first areas set aside specifically for wilderness protection by the Land Conservation Council in the late 1970s and early 1980s were largely based on the desire to provide some areas for self-reliant forms of open space recreation and to provide for wilderness experience opportunities.

Conflicts about land use options in the remaining unmodified areas of Australia in the 1980s, such as in the northern Blue Mountains, Victorian Alps, the Franklin River, and the Daintree rainforests, have focussed the debate on the more fundamental element of wilderness - that of unaltered areas of natural land undisturbed by modern society. Groups such as the Australian



FIGURE 1:  
INVESTIGATION PROCESS



Conservation Foundation and the Wilderness Society have raised the level of community awareness about wilderness.

In recent years community and government interest about wilderness has increased. In Victoria, the government has included the protection of wilderness as an integral part of its Conservation Strategy and Parliament has enacted legislation to provide secure protection and for the control and management of designated wilderness parks and wilderness zones. Within Australia, most States and Territories have made, or foreshadowed, legislative provision for the protection and management of wilderness. Wilderness programs have also been developed in many other countries including the United States of America (particularly since their *Wilderness Act* of 1964), Canada, New Zealand, Zimbabwe and South Africa, all of whom have specifically designated wilderness protection areas and/or zones. A number of other countries are also developing wilderness programs.

An expanded discussion of the development of the concept in North America and Australia is provided in the Descriptive Report.

### Values of Wilderness

Most of the advantages of maintaining wilderness relate to non-consumptive values. These values relate to direct use of such areas by individuals - largely for self-reliant recreational use including solitude, inspiration and challenging activity; and use by society as a whole - contributing to nature conservation, scientific and educational, and water resource uses. While many of these values can be derived from a range of natural areas, many of them are maximised in wilderness.

In addition, wilderness has values arising from its intrinsic worth - that areas of wilderness be kept for their own sake. There is value in retaining some areas at a minimal level of development to ensure that present and future generations can enjoy wilderness if they wish and to maintain the spectrum of environmental settings from highly developed through to undisturbed.

A more comprehensive discussion of the values of wilderness is provided in the Descriptive Report.

### Why Protect Wilderness?

Probably no areas totally unaffected by our modern society remain today in Australia and almost certainly none in Victoria. Previous surveys (Feller *et al.* 1979) have indicated that less than 3% of Victoria could be considered as wilderness of highest quality, and, as noted in the State Conservation Strategy, (Victorian Government 1987) this area is still decreasing.

Data from the Survey of Wilderness Quality in Victoria (Preece and Lesslie, 1987) also illustrates the dramatic changes that have occurred in Victoria. There are now only nine localities in the whole of the State that are presently more than 15 km from settlement and only three localities are now more than 15 km from a road. Even more dramatically, only four localities are greater than five kilometres from a formed vehicular track (none of which are in the Alps), with the Sunset Country and Big Desert being the only two localities in the State that are greater than five kilometres from any kind of structure.

The largest trackless and structure free area, outside the Sunset and Big Desert areas, is in the Mount Darling/Snowy Bluff area in the Wonnangatta River catchment, an area of about 39 000 ha. Only the Sunset, Big Desert, the Avon, Wilsons Promontory, lower Mountain Creek/Snowy River, and the upper Genoa River, contain areas greater than 10 000 ha without any tracks, structures, or obvious past use. These appear to be the least modified areas of any appreciable size remaining in the State.

Victoria's landscape has clearly changed, and is continuing to change. Since the Preece and Lesslie survey of 1987, vehicular tracks have been upgraded and new roads constructed and timber has been extracted from previously undisturbed areas.

Even where relatively undisturbed areas are included within national parks, they are still subject to pressures of increased recreational activity and pressures for an incremental upgrading of track networks and facilities. In the absence of specific recognition of their wilderness values and corresponding management action, these special qualities may become degraded in the longer term.



The protection and management of some relatively large areas of the State in a way which minimises the extent of disturbance would provide a balance to the extensively developed areas elsewhere. It would also halt the trend of incremental development in some parts of the State. Council therefore considers that it is appropriate to undertake a Statewide investigation of wilderness to ensure that such a balance is maintained, and to concurrently review Council's present wilderness policy which has been virtually unchanged since its adoption 15 years ago. This policy is described in the Descriptive Report.

### **New Information**

The Council in its previous regional studies, which have now covered all of the State, has recommended specific wilderness areas, and recognised the wilderness value of other areas. In these previous studies, however, the Council has considered wilderness primarily as a recreational setting.

New information, notably the Survey of Wilderness Quality in Victoria (Preece and Lesslie 1987) is now available, as are national guidelines for the reservation and management of wilderness areas and international definitions and criteria. These consider wilderness as a condition of the land, generally characterised by remoteness and naturalness, rather than by the consideration of recreational value.

Preece and Lesslie's Survey provided, for the first time, a basis for the quantitative comparison of the wilderness quality of lands throughout Victoria. Its underlying premise is that there is a continuum of wilderness quality, where wilderness quality is defined as 'the extent to which land is remote from and undisturbed by the influence of modern technological society'.

The survey assessed wilderness quality by the variation in measurement of four indicators: remoteness from settlement, remoteness from access, aesthetic naturalness (that is the degree to which an area is free from the presence of structures), and biophysical naturalness. The results of the Preece and Lesslie survey have provided an important input into the Council's wilderness investigation.

### **The Major Government Strategies**

The Victorian government has developed three integrated strategies. These relate to social justice, economic development, and conservation. The Social Justice Strategy provides for equity through fairness of access to goods and services, opportunities for people to participate in decisions that affect them, and the protection of people's rights. The Economic Strategy aims at improving Victoria's competitiveness through improvement of the State's economic environment, and the identification and development of its competitive strengths.

In its Conservation Strategy for Victoria, the Government outlines a philosophy and a program of actions designed to protect and enhance our natural and cultural heritage and to achieve sustainable development through conservation. It also includes a number of specific references to wilderness. The document states that one of the government's objectives for protecting flora and fauna is to 'preserve remaining areas of high wilderness quality'. It further states that 'the few remaining tracts of wilderness will be identified with a view to ensuring their protection in reserves'.

To further this aim, the Strategy notes that the management of wilderness areas will be guided by the principles and guidelines adopted by the Australian Council of Nature Conservation Ministers but that the principles will be further refined. These have subsequently been reflected in amendments to the *National Parks Act 1975*.

The strategy is also concerned to limit the effects of fire, logging, grazing and road construction on, among other things, forest wilderness ... which it aims to protect, and that 'non-consumptive uses such as wilderness protection .... will be given greater priority than ever before'.

Council's Wilderness Special Investigation addresses these aspects of the Strategy, while also taking into account social and economic considerations.

### **Information Sources**

In formulating its proposed recommendations Council has used information from a range of sources.



The results of the first stage of the Investigation, as published in the 'Wilderness Investigation Descriptive Report' (LCC 1990) provide much of the required basic information. The report was compiled by Council officers in conjunction with a study group using a range of government and non-government sources, including both published and unpublished references. The report provides information on:

- \* the concept of wilderness
- \* its identification and protection in Australia and overseas
- \* wilderness values
- \* current approaches to wilderness in Victoria
- \* the remaining areas of high wilderness quality in the Victorian context
- \* uses that have and are likely to influence wilderness quality
- \* an overview of wilderness quality in Victoria
- \* the wilderness quality of special areas, such as off-shore islands
- \* possible approaches to wilderness protection

The report also includes detailed descriptions and maps of 23 study blocks which include areas of high wilderness quality. Copies of the report are still available for purchase, at a cost of \$15, from a number of outlets including the Information Victoria Bookshop at 318 Little Bourke Street, Melbourne, and can be inspected at the Department of Planning and Housing Library, ground floor, 477 Collins Street, Melbourne, as well as many regional libraries. It can also be obtained by inter-library loan.

Following the publication of the Descriptive Report, the Council's chairman and research staff met with representatives from 21 rural municipal councils in and around the areas studied in detail. Meetings were also arranged with a number of interest groups, including conservation groups, industry groups, and a range of recreation groups. Field inspections were also undertaken by Council members and research staff. Numerous government departments, public authorities, community and industry groups and individuals have provided much information about the values and uses of such areas, in their submissions to Council, and have thus expanded Council's information

base. An outline of the issues raised is given in the following section of the introduction.

In response to these submissions, Council has sought additional information on specific issues from published literature and other sources including a number of government departments. A study group, consisting of Council staff, Governor in Council appointees, and officers nominated by Council members assisted in the collection and review of detailed material on existing and potential uses in areas of identified higher wilderness quality.

Information from two specially commissioned consultancies was also utilised. The results of the first study, a survey to obtain an indication of society's perception of wilderness and its attitudes towards, and expectations of, wilderness (Roy Morgan Research Centre Pty Ltd 1989) are outlined in the Descriptive Report.

The second commissioned study was a social and economic assessment of candidate wilderness areas undertaken by Econsult (Australia) Pty Ltd (1990). An outline of this study and its conclusions is provided below.

The full report of both studies are available for inspection at the Department of Planning and Housing Library or through inter-library loan.

## Issues Raised in Submissions

Following publication of the Descriptive Report, Council received 605 submissions and letters, each providing information, opinions or comment. All of them were considered by Council prior to the preparation of these proposed recommendations. They have not, however, been treated as if they were a poll or referendum.

Submissions were received from a cross-section of the community. A diverse range of individuals was represented, as were a wide range of interest groups and organisations, as well as many municipal and State government bodies. A significant number of the submissions were from individuals who had visited and who, therefore, had first hand knowledge of the descriptive blocks. About half the submissions came from country areas.



Table 2 contains a summary of the source and type of the submissions with a complete list of all those who made submissions provided in Appendix I. All submissions are available for inspection at the Council's offices.

**Table 2**

**SOURCE AND TYPE OF SUBMISSIONS<sup>1</sup>**

	Number of submissions
<b>Number of Submissions:</b>	
Total number received	605
<b>Submission Type:</b>	
Pro-forma or standard letter	358
Other	247
<b>Place of Origin:</b>	
Melbourne	312
Country	261
Interstate	17
Not known	15
<b>Type of Group Making Submission</b>	
State government	12
Municipal government	19
Interest group	72
Interested individual	502
<b>Interest Group Breakdown:</b>	
Academic	3
Conservation	20
Industry	15
Recreational	25
Other - e.g. commercial business, fire brigade	9

**Notes:**

1. The table includes letters received after the closing date for submissions.

The submissions contained a diversity of views about the wilderness concept itself: the need for wilderness areas, their benefits, methods of reservation, size, the potential uses, and management, as well as canvassing other issues and conflicts related to the investigation. Council appreciates the significant time and effort put into the preparation of the submissions.

The great majority of submissions and comments received supported the need to maintain some areas in the State in an essentially natural condition; and there was general agreement that such areas are special.

However, suggestions on their extent, management, appropriate uses, and need for restoration varied significantly. These differing views are summarised in the next section of the Introduction, which groups the issues to reflect the way the questions were posed in the brochure which was inserted in the descriptive report and was available separately. An overview of issues raised in submissions is provided in Table 3. A more comprehensive breakdown is available from the Council.

**Table 3**

**OVERVIEW OF ISSUES RAISED IN SUBMISSIONS**

	Total number
Resource information	134
Areas proposed for protection	460
Definitions	68
Boundaries	176
Size	23
Need for protection	306
Benefits of wilderness	172
Suggested permitted uses	390
Suggested excluded uses	165
Suggested uses of buffer areas	31
Mechanisms of protection	397
Emphasis of management	222
Fire	28
Introduced species	19
Restoration or enhancement	311
Other issues	8

**Notes:**

1. Includes letters received after the closing date for submissions.
2. Many submissions included comment on more than one issue.
3. Opinions related to the above issues varied considerably.

**Outline of Issues Raised**

The inclusion of issues in the following outline does not necessarily imply Council endorsement or rejection of the opinions expressed. Council is also aware that statements made in submissions may be factually incorrect.



## Definitions

Suggested definitions of wilderness ranged from the philosophical to the empirical. The majority of the submissions stated that wilderness concerned large, natural, and little modified areas. There were, however, many differences in opinion on the level of modification that should be accommodated in the definition. There was also some concern that the impacts of Aboriginal occupation, especially their use of fire, followed by those of European settlement meant that there are no true wilderness areas left.

Some submissions recognised the differences in definition and purpose between reference areas, national parks, nature conservation reserves, general bushland, and wilderness areas. Others did not. There was also some confusion of the term wilderness quality (as used in the continuum approach of the Preece and Lesslie survey) and wilderness of high quality. There were differences in opinion about the appropriate weighting of remoteness and naturalness factors as used in the Preece and Lesslie survey.

## Size

There was no consistent view of the appropriate size for wilderness areas. The suggested criteria for determining size included considerations of sustainability and land uses at the perimeter, to more than a day's walk to traverse, and 'as large as possible'. Specific suggestions for size ranged from 1000 ha or less to at least 150 000 ha. The comment was also made that there is little justification in setting aside large areas at all.

## Areas proposed for protection

Many submissions made general suggestions about the need to designate wilderness areas in the Mallee, the Alps and East Gippsland. Other areas suggested included parts of the Otways, and the Grampians. About 30 submissions made detailed suggestions of protection areas. Such areas are discussed further in Chapters A and B.

## Boundaries

Most submissions responding to this issue recognised the desirability or otherwise, of using natural boundaries or permanent

features such as roads. Some submissions also considered that there should be a buffer of some extent to separate protected wilderness from freehold land.

## Need for Protection

A large number of submissions considered that wilderness is scarce, rapidly disappearing and irreplaceable, and that unless it is protected now, the next generation will not be able to experience such areas (at least not in Victoria). Many also felt that a balance of land use had long passed. Wilderness was also seen as contributing to overcoming greenhouse effects, maintaining ecological diversity and for enhancing the quality of life.

In contrast, other submissions expressed the view that there was no need for special wilderness protection and that the extensive areas already protected in national parks is enough. The need to ensure that no further restrictions were placed on areas available to the timber and mining industry and for recreational vehicular use were suggested by some as being more important than wilderness protection, as these also contribute to the quality of life.

## Benefits of wilderness

Many submissions mentioned the benefits of setting aside land as wilderness areas in terms of the preservation and maintenance of natural systems or for reference, while others felt that the vicarious pleasure gained in the very existence of wilderness was a key benefit.

Many others saw wilderness areas as providing opportunities to undertake forms of recreation away from the noise and trappings of modern civilization, and as important for obtaining feelings of remoteness and inspiration in natural environments. Others acknowledged an intrinsic right of wilderness to exist irrespective of any human benefit.

Some submissions observed that the many benefits ascribed to wilderness could be obtained in any natural area. Some also expressed concern that people getting into difficulties in remote areas or while pursuing challenging activities would place strain on local search and rescue services.



## Uses

Suggested uses reflected the particular interests of the people writing the submissions and included almost all of the activities now carried out on public land. Most supported at least some form of recreation use of wilderness, particularly for non-mechanised types such as bushwalking, canoeing and cross country skiing. Other interest groups variously suggested hunting (in particular deer hunting), horseriding, four-wheel-driving, recreational prospecting, and other uses dependent on vehicular access. Mineral exploration and timber harvesting on a rotational basis were also suggested as appropriate uses.

The corollary to discussion of those uses which should be permitted in a wilderness is consideration of those which would be excluded. The majority of those who addressed this issue considered that any artificial structures, introduced plants or animals, any activity that utilised mechanised equipment, and any practise that affected the natural environment should be excluded. There was concern that even minor impacts could have a cumulative deleterious effect.

For land surrounding the wilderness 'cores', it was suggested that activities could be staged to permit increasing utilisation with increased distance from the core. These 'buffer' areas were seen as providing the opportunity to undertake fire, vermin and weed control activities without compromising the values of the core.

Other suggestions included: a proposal that the combined impact of all activities could be limited rather than concentrating on a few. That is, each activity should be treated on its merits; with the understanding that none would be automatically excluded to protect recognised wilderness values. Land outside wilderness areas should be managed to enhance the opportunities for activities that are incompatible with wilderness, thereby reducing the pressure on the wilderness area itself.

## Mechanism of protection

While not opposing the need to protect wilderness values, some submissions put the view that there was no need for special legislation as the existing provisions for

national parks would suffice. In addition not all submissions advocating wilderness were necessarily seeking more areas for incorporation into protective categories. The alternative view was that protection was needed beyond that offered by the national parks legislation.

Suggested methods of designating the protected areas ranged from a single category for all areas, with management aiming to enhance wilderness values, up to a variety of four-tier systems. In the latter cases areas were classified by the nature of the activities permitted within them with a greater variety of activities permitted in the more disturbed areas.

## Emphasis of management

There was a general agreement that adequate resources should be provided to manage any land designated for wilderness protection.

Many submissions considered that the major thrust of management should be directed towards enhancing wilderness values - particularly those associated with nature conservation. It was also suggested that protection could be gained by public education rather than by the imposition of management or regulations.

## Fire

Concerns about fire were raised by a large number of submissions, in terms of the effects that wildfire or fire management could have on the environment, as well as the need to protect public and private property.

The submissions discussed wildfires, the desirability or otherwise of letting naturally-caused fires burn, fuel-reduction burning, the effects of grazing, different levels of public access and the fire history of an area. Fire-control activities in the buffers to wilderness areas were seen by many as integral to management.

## Introduced species

The presence, control and uses of introduced animal species in relation to wilderness were mentioned in many submission.

Some suggested that wilderness would always harbour vermin and weeds while others



considered that the removal of conflicting activities, such as grazing and vehicular access, and the restoration of native vegetation would preclude invasion by exotic species. Hunting was advocated by some as a way of controlling introduced species, including deer. Buffer areas were also seen as important areas in which to carry out control activities.

#### Restoration or enhancement of wilderness

Some submissions considered it necessary to not only exclude some activities but to actively remove features incompatible with wilderness, such as structures or vehicular tracks, to enhance those areas set aside. Others considered that the land is already irreversibly compromised by past activities and by the presence of exotic species, and that wilderness cannot be created.

Observations about roads and tracks and the need to retain or eliminate them were submitted by a large number of people. The principle concern of many was to retain existing access for fire protection and recreation. Others were concerned that any track within a wilderness would compromise its values even if maintained for management purposes only.

#### Other issues

Several submissions suggested that the costs and benefits to the community of either having or not having wilderness areas should be determined. Comment was also made that there are considerable difficulties in attempting to place monetary values on intangible benefits.

A number of submissions commented on the Roy Morgan Research survey on attitudes to wilderness. Concern was expressed about the nature of the questions and the ability of the respondents to provide meaningful answers, given their possibly limited knowledge of wilderness.

### Development of the Proposed Recommendations

Having read and considered the submissions to the Descriptive Report, the responses obtained from direct contact with interest groups and municipalities, and the indications of community attitudes outlined in the

Morgan Research, Council believes it is appropriate to identify and protect a number of wilderness areas, and other areas of high wilderness quality.

Council also concluded that:

- \* it is appropriate that areas of highest wilderness quality and associated relatively undisturbed areas be given highest protection, and that areas of lower but still relatively high value be given protection to at least maintain their present condition.

and that

- \* it is not appropriate for this special investigation to attempt to identify and protect all relatively unmodified or natural areas, or to attempt to protect all areas that may provide a sense of remoteness or a wilderness experience, as public perceptions of these vary widely.

In its consideration of areas for possible wilderness protection, Council is also required to consider the social and economic implications of such protection.

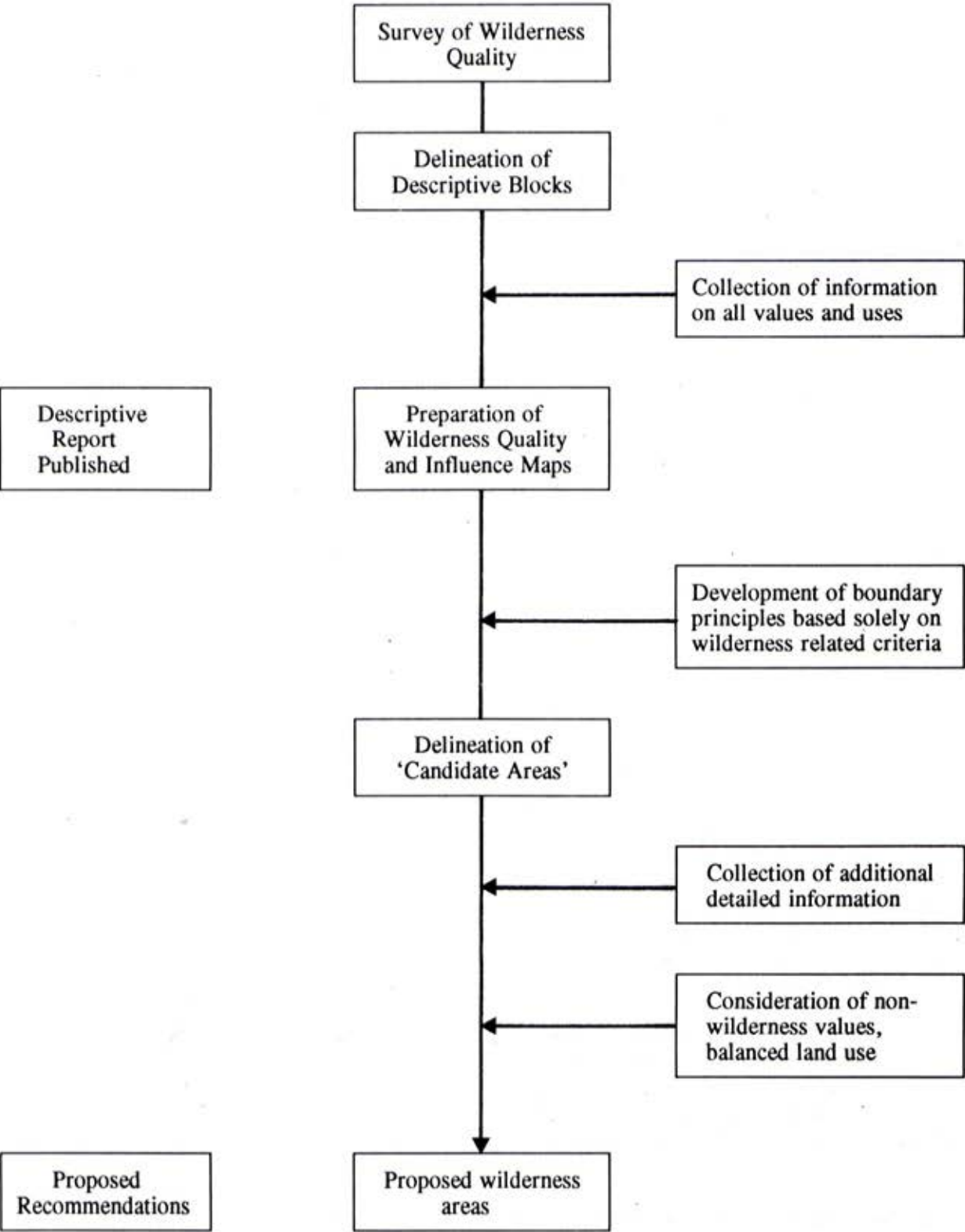
#### Identification Process

The process used by Council to assist in identifying those parts of Victoria to be managed specifically for the protection of their wilderness values, is outlined in Figure 2.

Council's initial approach was to centre on nodes of highest wilderness quality (generally corresponding to class 5 and above wilderness quality as measured by Preece and Lesslie, and as mapped in the Descriptive Report) and to move outwards across land of similar physical condition (or naturalness) towards the edges of major disturbance (being areas intensively grazed or logged, as well as the major structural boundaries such as roads or edge of the settled land). The wilderness quality values recorded in the Preece and Lesslie survey were thus used to provide the focus of the area to be protected, but not to define the actual boundaries themselves.

Boundaries were defined by the application of a set of principles to detailed mapping (at a

**Figure 2: GENERALISED PROCESS OF IDENTIFICATION**





scale of 1:100 000) of the physiography and land uses of the descriptive blocks. The set of principles used for establishing boundaries accord with the more general criteria of the Council of Nature Conservation Ministers (CONCOM) and the International Union for Conservation of Nature and Natural Resources (IUCN) which are, respectively, the recognised national and international standards (see Appendix II).

The principles used are listed below:

#### Boundary lines

- \* Protective area boundaries should reflect natural boundaries, such as catchment divides or rivers, wherever possible. In some circumstances, where disturbance on a divide could result in impact, it may be appropriate for the protective area boundary to be a specified distance beyond the natural boundary. The break of slope of an escarpment may in some circumstances also be an appropriate boundary.
- \* Where natural boundaries are not obvious (for instance in contiguous areas of semi-arid vegetation without disturbance changes) or inappropriate (for instance where major disturbance is present between the natural boundary and the area of highest quality) other boundaries such as roads or the edge of settled land should be used. Boundaries could correspond directly to these features or preferably, and where practicable, be a defined distance from that feature.

#### Size and shape

- \* No absolute minimum size requirement is defined. It is assumed that the relationship between the area of high value and the adjoining land use is the critical factor. That is, whether it is surrounded by settled land (cleared farmland) or by natural lands (State forest or national park) is of greater relevance to defining the effective size of a protective area, than the size of the protected area itself. It is clear, however, that the larger the protected area the more ecologically secure it will be. See Appendix III for further information on size from an ecological viewpoint.

- \* The 25 000 ha guideline, proposed by CONCOM (1986), is used as a guide for the minimum size of a protective area. It is expected that only in exceptional circumstances would an area protecting wilderness be less than 10 000 ha (which also reflects the inclusion threshold used in the Preece and Lesslie survey).
- \* Protective areas should ideally have a low perimeter to area ratio (a circular shape being the theoretical ideal).

#### Buffers

- \* Unless otherwise impracticable, all areas requiring specific management to maintain or enhance wilderness quality should be included within the boundary of the designated protected area. That is, in most instances, any buffer required to protect the areas of highest wilderness quality should be included within the protected area boundary. It is not envisaged that there would be any specific restrictions on land use on adjacent public land.
- \* To avoid 'edge effects' which might reduce the naturalness of a protected area and to permit more intensive management practices in adjacent areas boundaries should not abut (cleared) freehold land.

#### Restoration

- \* Wilderness area boundaries should be defined with an awareness that restoration, or techniques to enhance wilderness quality could be carried out within the area identified.
- \* Generally a minor disturbance, such as that arising from low intensity grazing, or a low density of vehicular tracks or minor structures, is not considered to be necessarily limiting. There may also be some circumstances, for example where required size, shape or buffer criteria would otherwise not be met, where small areas of major disturbance may be included in a protected area, in order to provide a more appropriate protective area boundary.

The next step in the identification process was a mapping exercise which applied the



boundary principles consistently across all areas of each descriptive block and which led to the exclusion of large parts of many blocks. The remaining areas were reviewed, and a number were considered marginal and deleted. Such areas were generally at the limits of size or shape criteria, or had several major disturbances within the natural boundary. (Excluded areas, nonetheless, may contain important wilderness-related values. Such areas are discussed further in Chapter B).

As a result of this process, those areas which met the established criteria described above, were identified. For the purpose of further investigation, these areas were termed candidate areas. They were delineated solely on the basis of their wilderness values. In all, Council delineated 22 candidate areas.

Further detailed information was sought on the candidate areas including information on their condition, the other values they possessed, and the possible socio-economic cost and benefits of the range of activities occurring within them. A major part of this task was met through a socio-economic assessment which is described in the next section of the Introduction.

In many instances it was possible, by making minor adjustments to the 'candidate area' boundaries, to avoid conflicts with other non wilderness values while still ensuring the protection of the areas of highest wilderness quality. In other instances Council has had to make specific choice between the protection of wilderness values or provision for other land use activities.

A major portion of many of the candidate areas have now been proposed by Council to be wilderness areas. The other areas were excluded because of their smaller size, their comparatively greater disturbance relative to their size, or because of competing land use activities. Nonetheless, most of the excluded areas have important wilderness-related attributes, and have been included in the listing of other Areas with Remote and Natural Attributes (See Chapter B).

In its consideration of detailed boundaries, Council has also been aware of the desirability of boundaries to be conducive to management. To this end, boundaries should be easily identifiable, avoid bisecting non-

conforming existing use patterns. The use of natural boundaries (one of the candidate area boundary criteria) has generally facilitated the attainment of this objective.

### **Approach to Uses in Wilderness Areas**

Council has considered that uses of wilderness areas be determined according to their compatibility with the primary aim of maintaining or enhancing wilderness quality. It is also aware that the consideration of uses needs to be put in the context of a 50 to 100 year period.

### **Uses affecting wilderness quality**

All those features that influence wilderness quality, as measured in the Preece and Lesslie survey, are listed in Table 4, (which is reproduced from page 115 of the Descriptive Report). To meet the objective of maintaining wilderness quality, at a minimum, no additional examples of those features listed in the table should be permitted within a protected area. Similarly, the most obvious method of enhancing the wilderness quality of an area is to attempt to remove or rehabilitate ('revert') the evidence of any such feature.

Any use reliant on the creation of additional such features would be incompatible with an objective of maintaining or enhancing wilderness quality, as would most uses reliant on the continuing presence of these features.

Of the four indicators used to measure the remoteness and naturalness attributes of wilderness, Preece and Lesslie had difficulty in defining features which gave a true and simple measure of biophysical naturalness which they defined as 'the degree to which the natural environment is free of biophysical disturbance due to the influence of modern technological society'. (Biophysical is a term used to encompass biological features, such as plants and animals, as well as physical features, such as soils and land forms). As such, the features listed in Table 4 only give a general picture of those which affect biophysical naturalness.

The continuation of any resource utilisation activity such as timber extraction and mining or the introduction of non-native animals through grazing of livestock would be incompatible with the maintenance or



**Table 4**  
**FEATURES INFLUENCING WILDERNESS QUALITY**

1. Urban areas where natural vegetation has been largely or completely replaced	18. Constructed and maintained airstrips
2. Agricultural areas where natural vegetation has been largely or completely replaced	19. Railways, both those operating and disused
3. Timber plantations where natural vegetation has been largely or completely replaced	20. Four-wheel-drive tracks
4. Pastoral areas where natural vegetation has been largely or completely replaced	21. Huts
5. Recreational areas where natural vegetation has been largely or completely replaced	22. Ruins
6. Water reservoirs where natural vegetation has been largely or completely replaced	23. Windmills
7. Towns	24. Yards (and fencelines)
8. Houses	25. Bridges
9. Resort developments	26. Helipads
10. Homesteads	27. Towers
11. Operating mines	28. Quarries
12. Operating sawmills	29. Camping grounds
13. Lighthouses, both those occupied and unoccupied	30. Small dams
14. Electricity generation facilities, whether occupied or unoccupied	31. Jetties
15. Communication installations, whether occupied or unoccupied	32. Channels
16. Major two-wheel-drive roads	33. Pipelines
17. Minor two-wheel-drive roads/tracks	34. Aqueducts
	35. Powerlines (major and minor)
	36. Snow pole lines
	37. Abandoned equipment
	38. Selectively logged areas
	39. Clear-felled areas
	40. Areas grazed at low and high intensity
	41. Bee-keeping sites
	42. Brush-cutting areas
	43. Past mining operations in river valleys
	44. Areas of frequent fuel-reduction burning

*Source* : Preece and Lesslie (1987)

enhancement of biophysical naturalness and thus the maintenance or enhancement of wilderness quality. Other uses, including various recreational activities, will also have some impact. The degree of impact of such uses varies and often is more related to the manner and intensity of use, rather than to the use itself.

It cannot be assumed however that an existing use, even at current levels, will necessarily mean that the existing condition of the natural environment of a given area will be maintained.

#### **Uses affecting derived benefits**

In addition to considering those uses which directly affect wilderness quality, Council considers it appropriate to give particular attention to those uses which derive special benefits from such areas.

For instance, wilderness environments are particularly important as settings for various types of recreation and for the attainment of a wilderness experience by visitors to such areas. The uses which appear to relate specifically to this are usually defined in terms of non-mechanised, self-reliant forms of recreation, inspiration and solitude (see page 39–42 of the Descriptive Report).

While wilderness experience needs are considered met if the natural systems are little disturbed, other recreational uses, such as those involving use of firearms or those generating excessive noise, may be in direct conflict.

As well as giving consideration to use and management based on providing for wilderness experience, Council considers it is appropriate to give specific consideration to the derived benefits of other uses of



wilderness. For example, protection of scientific reference or nature conservation values, particularly where they occur in sensitive environments or in the environs of rare species or fragile communities, may require that recreational use be limited.

### **Socio-economic Consultancy**

As mentioned previously, Council commissioned a consultancy into the social and economic benefits and costs that could arise if certain land use activities were precluded from the candidate areas described earlier. This consultancy was undertaken by Econsult (Australia) Pty Ltd. In seeking an independent appraisal, Council requested that the Consultants assess the implications of all known resource and development issues. Each candidate area was examined by the consultants, and their analysis assisted Council in clarifying any implications prior to its making a decision about the proposed recommendations.

Government agencies with responsibilities for water, timber and mineral resources, and agricultural and industrial developments provided information to assist the consultants, who also had access to a systematic description of the available timber resources within each candidate area.

The study process used by the consultants involved four stages; a desk top review, quantitative analysis, qualitative analysis and comparison and summary:

#### **Stage 1 - Desktop review**

This stage involved an initial review of background material to the wilderness investigation, a literature review and the collection and collation of relevant statistics from government and industry sources.

#### **Stage 2 - Quantitative analysis**

Where appropriate, the likely costs and benefits accruing to each candidate area were analysed in monetary terms. The bases for analysis were government and industry statistics and information obtained from mail-out questionnaires. Questionnaire data formed an important information base for the analysis of livestock production, apiculture and tourism sectors.

#### **Stage 3 - Qualitative analysis**

For a number of issues, the likely costs and benefits could not reasonably be analysed in monetary terms. In particular, wilderness and recreation values required a more qualitative analysis. Peak bodies representing key recreation groups were consulted, while wilderness values were considered in the light of the results obtained from a literature review. Appropriate government and industry officials were consulted for all identified issues. They also provided insights into broader issues and provided access to relevant statistical information.

#### **Stage 4 - Comparison and summary**

The information obtained from the study was then synthesised. The social and economic implications of the implied land use change were assessed for each candidate area and, where appropriate, associated regions. Wilderness values were assessed separately. A comparative summary of the issues was then developed for candidate areas using qualitative and quantitative assessment.

### **Conclusions**

The consultants concluded that the contribution of the candidate areas to Statewide or regional production or activity was generally low, other than for the contribution that five candidate areas make to timber production. However, some individual enterprises involved in apicultural production, livestock production and commercial tours are reliant on parts of one or more candidate areas for a significant portion of their income.

Such implications were taken into account in the framing of the proposed recommendations.

The full summary of the findings of the consultants social and economic assessment report for the candidate areas is included in Appendix IV. As indicated previously the full report can be inspected at the Department of Planning and Housing library and is available through this library for inter-library loan.

The Council subsequently met to formulate its proposed recommendations and then the consultants were asked to provide an



assessment of the possible socio-economic impact of these proposed recommendations. These findings are included in the following summary of the proposed recommendations and further detail is contained in the descriptions of each proposed wilderness area in Chapter A.

## Proposed Recommendations

Having considered submissions arising from the publication of the descriptive report and all other available information including the results of the social and economic assessment consultancy, discussions with numerous individuals and groups, both in Melbourne and country Victoria, and inspection of a number of areas Council has formulated these proposed recommendations.

### Wilderness Areas

A number of approaches to the protection of areas of high wilderness quality were discussed by Council. In particular, it considered the desirability or otherwise of having more than one level or category of wilderness protection. However, Council was concerned that having more than one category to protect wilderness would be undesirable, as it could lead to confusion in the community and place an unnecessary burden on land managers with respect to the interpretation of the Council's recommendations.

Council has therefore adopted a single land use category (wilderness areas) to encompass areas of high wilderness quality that should be protected. Such areas would be managed to maintain and enhance wilderness quality. No utilisation would be permitted and recreational use would be limited to self-reliant, non-mechanised forms.

Council has identified 13 areas in Victoria to be protected and managed as wilderness areas, including the two existing areas of Big Desert and Avon; as well as four additions to existing wilderness areas. All include areas of high wilderness quality. In some instances, however, they also include small parts that have been disturbed but which in time will be restored following rehabilitation.

The consultants findings on the implications of the proposed wilderness areas is provided

below. The Council stresses that these are the views of the consultant, and are not necessarily those of the Council.

### Summary of Implications for Proposed Wilderness Areas

Subsequent to providing information on the social and economic costs and benefits of activities in each of the candidate areas, the consultants were asked to provide the Council with a summary of the social and economic implications of the 17 areas proposed to be set aside as wilderness. These proposed wilderness areas are smaller than the candidate areas and many of the potential implications identified for the candidate areas do not apply to the Council's proposed wilderness areas. Table 5, below, summarises the consultant's view of implications and their level of significance for each proposed wilderness area.

The consultants consider that in a State-wide or regional context the contribution that the wilderness areas make to those forms of commercial activity that are precluded under the proposed recommendations, is nil in some areas to very low in others. In no areas are there significant State or regional implications. The same applies to excluded recreation activities such as four-wheel-drive and horse-riding. At a local scale, however, the consultants identified a number of significant implications.

In relation to livestock production, seven individual licensees, involving five proposed wilderness areas, could be significantly affected. The actual level of impact is difficult to assess because the boundaries of the proposed wilderness areas cut across the licensed grazing blocks. This means that the areas actually grazed within the wilderness area may be contiguous with areas grazed outside. If stock grazing were excluded from the total area of each of the affected licensed blocks, the impact on the seven licensees would be much greater than if grazing was only excluded from the wilderness area. However, it would only be possible to exclude stock from the wilderness area by fencing the boundary. Even in this instance, the level of impact on individual licensees could still be significant in some cases. In addition, six of the seven licensees affected all operate in the north-east of the Alpine National Park. A reduction in



Table 5

## SUMMARY OF IMPLICATIONS - PROPOSED WILDERNESS AREAS

Proposed wilderness area		Timber	Livestock production	Apiculture	Water resource devel.	Mining	Tour operations	Recreation activities
A1	Sunset	0	0	0	0	0	0	0
A2	Big Desert	0	0	0	0	0	0	0
A3,A4	Big Desert addition	0	0	0	0	+	0	0
A5,A6	Wyperfeld	0	0	0	0	0	0	0
A7	Avon	0	0	0	0	0	0	0
A8	Mt Darling/ Snowy Bluff	0	+	0	0	0	x (horse riding)	+ (deer hunting, 4WD)
A9	Razor/Viking	0	x	0	0	0	0	0
A10	Davies Plain	0	x	0	0	0	x (horse riding)	* (4WD)
A11	Cobberas	0	x	0	0	0	0	+ (4WD)
A12	Reedy Creek	x	x	0	0	0	0	+ (4WD)
A13	Tingaringy	0	x	0	0	0	0	0
A14,A15	Rodger/Bowen	0	0	0	0	0	+ (4WD)	+ (4WD)
A16	Genoa	0	0	0	0	0	0	0
A17	Sandpatch	0	0	0	0	0	0	0

## SIGNIFICANCE OF IMPLICATION

0 - Nil	* - Significant 'community' effects
+ - Minor	x - Significant effect on individuals

livestock production in this general area due to these proposed recommendations could have important local effects on this section of the Gippsland community which are difficult to quantify.

One other grazing licensee is affected, but to a minor extent if grazing is excluded from the wilderness area.

Two proposed wilderness areas (Mt Darling/Snowy Bluff and Rodger/Bowen) will have some impact on two existing tour operators. Neither operator relies totally on the proposed wilderness areas. An additional tour operator who uses the proposed Davies Plain wilderness area would also be affected. The operator has, however, has only recently been granted a permit conditional on the recommendations of the LCC investigation on wilderness.

The Davies Plain track which bisects one of Council's proposed Davies Plain wilderness

area is regarded as an important track for four-wheel-drive recreation; a use that would be precluded under the recommendations. Three other wilderness areas include tracks of minor importance for vehicular four-wheel-drive recreation.

The only other implication identified relates to the two areas of State forest proposed to be added to the existing Big Desert Wilderness Area. Both areas are regarded as being highly prospective for fossil fuels. However, the remaining areas of State forest in the Big Desert as well as extensive areas of adjoining private land in Victoria and South Australia are also highly prospective. Given the area to be included in the proposed wilderness area in comparison to the total prospective area, the impact is likely to be minor.

Table 6 provides some public land statistics for the proposed wilderness areas and for Victoria as a whole.



**Table 6**  
**PUBLIC LAND STATISTICS**

National Parks	Percentage of park proposed as wilderness area (%)
Murray--Sunset	21
Wyperfeld	50
Alpine	21
Snowy River	48
Coopracambra--Kaye <sup>1</sup>	55
Croajingolong	18
All national parks <sup>2</sup>	23

Size	Area of proposed wilderness in major regions (ha)	Percentage of all proposed wilderness areas (%)
Mallee (4 areas)	431 100	61
Alps (6 areas)	177 100	25
East Gippsland (5 areas)	101 500	14
Total Victoria (15 areas)	709 700	100

Vehicular tracks	Length of track (km)
Mallee - major public land blocks	1 396
- proposed wilderness areas	20
Alps - all public land	9 000
- Alpine National Park	2 773
- proposed wilderness areas	191 <sup>3</sup>
East Gippsland - all public land	3 007
- proposed wilderness areas	177 <sup>4</sup>

**Notes:**

1. Calculations include government's proposed addition to national park.
2. Only six of the 32 national parks in Victoria include a proposed wilderness area.
3. Includes 84 km presently available to management vehicles only.
4. Includes 10.5 km presently available to management vehicles only.

In addition, it is relevant to note that no apiculture sites have been included in any of the proposed wilderness areas, nor has any areas of State forest known to contain timber resources included in current sustainable yield estimates. Table 6 also shows that the length of tracks currently available for four-wheel-drive use has been minimally affected by the Council's proposals.

### Other Areas with Remote and Natural Attributes

Council also considers that there are other areas of the State, whose wilderness related attributes of remoteness and naturalness should be recognised and maintained to the extent possible consistent with existing permitted uses. Twenty-two such areas have been identified.

As the Council's recommendations for these areas do not preclude any existing permitted use they do not have any detrimental socio-economic impact.

### Principles of Management

Council has also outlined principles of management to guide the management of wilderness areas. They cover a range of issues, including existing modification, introduced species, fire management, and recreational and other uses.

### Relevant Legislation

Until recently there were no specific legislative provisions relating to wilderness areas in Victoria. Amendments in 1989 to the *National Parks Act 1975* created a separate schedule for wilderness parks. It provides specific principles for the management of scheduled wilderness parks, prohibits development in them (other than for limited exceptions for necessary management purposes), and provides for proclaimed wilderness zones within other parks to be managed as if they were wilderness parks. It is intended that land proposed in these recommendations as wilderness areas be covered by these provisions.

Some of the land proposed for wilderness protection includes areas that Council has previously recommended to be reference areas. Such areas are to be used to maintain



natural ecosystems as a reference to which those concerned with studying land for particular comparative purposes may be permitted to refer. Conflicting activities are not permitted in these areas and access is restricted. The *Reference Areas Act 1978* provides for reference areas to be proclaimed by the Governor in Council. Existing practice is for such proclamations to be made as an overlay to existing land tenure (generally State forest or land managed under the *National Parks Act 1975*).

It is intended that where reference areas occur with land proposed to be a wilderness area in these recommendations that the reference area provisions remain.

The Council is also aware that if these proposed recommendations are finally adopted by the Government it will be necessary to modify the wilderness provisions of the *National Parks Act 1975* to allow deer hunting in three of the proposed wilderness areas, and to allow non-destructive mineral exploration.

### **Management Responsibilities**

The majority of Victoria's public land, including all land encompassed by these proposed recommendations, is managed by the Department of Conservation and Environment through its 16 regional offices. Eight such offices cover land referred to in these recommendations.

Each regional office is responsible for the management of all public land in that region, irrespective of whether an area is national or State park, State forest, a reserve set aside for community use, or unreserved Crown land. Particular attention is given to fire prevention and suppression, which is, likewise, carried out in the region irrespective of the area's particular land use tenure. Responsibilities for the *Vermin and Noxious Weeds Act 1958* are also implemented through the regional organisation irrespective of public land tenure.

### **Management Planning**

Council's role in the planning process involves broad scale public land use planning. This provides the focus and direction for subsequent management planning, which concentrates on more

detailed issues relating to the day to day management of public land.

Management plans are prepared by staff of the Department of Conservation and Environment in consultation with the relevant policy divisions. Such plans have appropriate regard to other Government and Departmental policies and plans, including, for example, Regional Strategy Plans and Fire Protection Plans, will likewise have appropriate regard to Park Management Plans whether proposed or approved. The *National Parks Act* states that a management plan must be prepared for each wilderness park within two years of its formal proclamation.

All park management plans specify the purpose for which the park was established, park management objectives, a zoning plan and management strategies and actions. The level of planning required varies according to the complexity of the issues involved. Separate planning teams are sometimes formed. One such is the Alpine Planning Project team, which is currently finalising management plans for the Alpine National park.

Public participation in the management planning process is encouraged at all stages, with a proposed plan released for public comment prior to the preparation of a final plan.

In most instances, final park management plans are approved by the Director of National Parks and Public Lands after consideration by the respective regional manager and the Minister for Conservation and Environment. Under an amendment to the *National Parks Act* in 1989 the management plans for the Alpine National Park are also required to be tabled in Parliament and may be disallowed by resolution of both Houses of Parliament. In addition, any proclaimed wilderness zone within a park must be approved by both Houses of Parliament, under a provision of the *National Parks Act*.

Planning processes are presently underway in a number of national and wilderness parks affected by the recommended wilderness areas. These being:

- \* Big Desert Wilderness Park; proposed plan is being prepared



- \* Alpine National Park and Avon Wilderness Park; proposed plan has been published, and a final plan is being prepared
- \* Snowy River National Park; a proposed plan is being prepared
- \* Croajingolong National Park; a draft management plan was published in 1985 and an updated proposed management plan is being prepared.

Council has maintained close contact with the Department of Conservation and Environment which is responsible for the development of these plans.

The wilderness special investigation is, unlike a management plan process, a State-wide study, and its recommendations consider wilderness from a Statewide perspective. Like all Council investigations, its final recommendations, as adopted by government, will provide the framework for more detailed planning and management, including the preparation or finalisation of

management plans (including those listed above). Management plans, it should be noted, also address a whole range of issues and needs in addition to the consideration of wilderness.

Wilderness zones identified in finalised management plans will reflect and be consistent with the final recommendations of the Land Conservation Council wilderness investigation, as accepted by government and approved by parliament.

Where an area which comes under the auspices of the National Parks Act is not yet subject to an approved management plan, it is managed in accordance with the Act and its regulations, Departmental policies and guidelines, Council recommendations, including those in this special investigation, and other relevant Government strategies. All proposals which involve development or modification of the Park environment require the approval-in-principle of the Director of National Parks and Public Lands, and the respective regional manager.

## GENERAL RECOMMENDATIONS

The following general recommendations qualify those in subsequent Chapters.

Council wishes to stress the need for adequate resourcing for management and protection of public land, as it has made its recommendations on the assumption that sufficient staff and finance will be provided for the appropriate detailed planning and management. Unless these resources are provided, Council's recommendations cannot be effectively implemented.

Areas that have been previously disturbed pose problems in the management of public land, particularly with respect to weeds and pest animals. Finance and staff are required to research and implement appropriate methods of rehabilitating such areas and controlling introduced species. When recreation use increases to the extent that it conflicts with wilderness values it will also require active management. As with most public land, fire protection and suppression measures will be necessary from time to time.

Council therefore recommends:

- I That the authorities responsible for managing and protecting public land be allocated the resources necessary for the task.

Council expects that, as a result of further study and investigation, additional areas with special values may be identified. New mineral resources or alternative uses of existing resources may also be discovered. New forms of recreational use may evolve and new management techniques become available. Community expectation and demands on public land changes over time. It is difficult for present planning to take into account all such circumstances.

Council therefore recommends:

- II That, when significant new information becomes available about the values, resources and demands on land within their administration, government agencies enlist the best advice available from relevant organisations on the importance of such information and how their management should respond. In some instances it may be appropriate for the Council to review its recommendations for wilderness protection.

Council recognises that in some cases existing legislation may have to be amended, or new legislation passed, in order to effectively implement the recommendations. It is aware that this may result in a delay, perhaps of several years, before some of its recommendations can be implemented. It is concerned that, where implementation of the recommendations would involve a change of land tenure, that identified values and management efficiency could be reduced during the delay period.

Council therefore recommends:

- III That, until the formal procedures for the implementation of those recommendations approved by government are completed, the present legal status and management responsibilities continue, except that the land be managed in accordance with the approved recommendations.

The boundaries of many areas have not been precisely surveyed. Council recognises that minor modifications and other adjustments may be necessary.

Council therefore recommends:

- IV That, where necessary, recommended boundaries be subject to minor adjustment.



## A. WILDERNESS AREAS

The submissions that Council received in response to the descriptive report were generally supportive of the need and desirability of ensuring that those relatively few areas of Victoria that have been little affected by European settlement are protected in the future.

The results of the Victoria-wide survey commissioned by the Council were also consistent with this response with the survey indicating that the majority of people considered wilderness as natural, unspoiled, wild and remote areas, which are beautiful, free, inspiring, and exciting, and that such areas of Victoria are important to protect as wilderness.

Council takes the view that it is indeed important to specifically designate those few large relatively modified areas remaining in Victoria for specific protection of their wilderness attributes. That is, Council considers that their intrinsic values, over and above Council's representative criteria used for the protection of nature conservation values in the establishment of national parks and other conservation reserves, are important enough for specific protection in their own right.

Council has adopted the following definition of a wilderness area:

'A large area with landforms and native plant and animal communities relatively unaltered or affected by the influence of the European settlement of Australia, and of sufficient size and shape and location with respect to adjacent land uses to make practicable the long-term protection of its natural systems and primitive condition; which is managed to maintain and enhance wilderness quality values.'

Note:

A large area, for the purpose of this definition, was considered to be about 25 000 ha. Actually, seven of the 13 recommended areas (excluding additions to existing areas in Victoria or New South Wales) are considerably larger. Four of the areas are

smaller, the main reason being that in eastern Victoria, where they occur, it is extremely difficult to identify large contiguous areas that have not been modified. However, the rugged nature of the topography and, in the case of the proposed Sandpatch Wilderness Area, its location adjacent to Bass Strait, mitigate to some extent the smaller size of these areas.

The definition outlined above is compatible with that used in current national (CONCOM 1986) and international (IUCN 1988) guidelines (see Appendix II).

### Identification Process

A consistent approach was used to identify areas with potential for wilderness protection. This approach is outlined in the Introduction.

All the recommended wilderness areas meet the recognised national and international identification criteria for such areas (see Appendix II). All are of large size (ranging from 16 000 ha to 142 500 ha) and essentially undisturbed, with only relatively localised areas of disturbance occurring.

### Use

As indicated in the Descriptive Report and the Introduction to this report, wilderness areas have value for a range of uses, which include recreation, particular experiences (such as solitude and inspiration), nature conservation, scientific study, education, and water production. Different areas of wilderness may have different capabilities to provide for each such use.

All such uses are, however, dependent upon and arise from the condition of the land, that is, the substantially unmodified natural setting described in Council's definition of wilderness. As such, the primary management objective of land set aside as a wilderness area is to conserve and enhance wilderness quality. Consideration of the appropriateness of any specific use or activity must reflect the need to ensure that the condition of the land and its natural systems are maintained and where possible, enhanced.



As noted in the Descriptive Report, virtually all human activity would affect such areas to at least some extent, although certain activities have greater potential for modifying natural systems than others. Council has therefore adopted an approach, which considers use in such areas primarily from a position of the extent to which any given use modifies the natural condition of the land.

The major forms of human activity that have modified natural lands in Victoria are resource utilisation and the construction of vehicular tracks and other structures. Council considers that any activity that results in similar disturbances to the environment, or which is dependant on the continuance of such disturbance is incompatible with the maintenance or enhancement of wilderness quality, and hence, the purpose of wilderness areas.

Consequently, and in line with the national and international guidelines, Council is recommending that resource utilisation not be permitted in wilderness areas and that no new vehicular tracks and structures be allowed. Only those existing vehicular tracks and structures required for essential management purposes will be permitted to remain.

Recreational uses dependent on the continuance of formed vehicular tracks, such as four-wheel-drive touring, trail-bike riding or mountain-bike riding; activities reliant on the use of non-native animals, such as horse riding or deer hunting with hounds; or those reliant on the stocking of fish, are all also considered incompatible and will not be permitted.

Deer hunting by stalking, in itself, appears unlikely to have a significant impact on the condition of the land. It is however dependant on the continued presence of introduced animals. Council is also aware that for many people the real or perceived hazard of firearm use significantly reduces their enjoyment of an area. Therefore, Council is recommending that deer hunting by stalking be permitted in three wilderness areas only, to provide some opportunity for this recreational activity in a wilderness setting. However, Council does not consider recreational hunting to be an appropriate use of all wilderness areas. The control of non-native species is covered in the management principles described in Chapter C.

Uses such as downstream water resource utilisation, some forms of mineral exploration (those that cause minimal disturbance to the natural environment) bushwalking, skiing (non-facility dependant forms), canoeing, rock climbing, fishing, camping, survival training, search and rescue training, scientific study, education, and nature study, are all considered by Council to be appropriate uses if carried out in a manner consistent with the management principles described in Chapter C. Such permitted uses are considered appropriate by Council irrespective whether they are carried out by private individuals, members of organised clubs, participants in commercial tours, or as part of a military training program.

### **Management**

Wilderness areas will require active management, because modifications of some kind have occurred in certain areas and some rehabilitation, at least in the short term, may be required. Where vermin and noxious weeds occur, the aim is to control these and work towards their elimination. Given the nature of Victoria's remaining land and its relative proximity to settled areas, fires must be controlled. Should recreational use of sensitive areas become focussed or intensive, this may also require active management in the future.

### **Alpine Grazing and Wilderness**

In formulating its recommendations for wilderness, the Council recognised that domestic stock grazing in the Victorian Alps is a significant issue requiring particular attention. Stock grazing is presently carried out in parts of all of the wilderness areas proposed in the Alps. While all such areas have been identified as having high wilderness quality, parts have been, or are currently grazed, thereby resulting in a reduction in wilderness quality. However, in a State-wide context they still have high wilderness value.

The Council believes that grazing by introduced herbivores, such as cattle, is incompatible with the concept of wilderness. The issue is essentially that if wilderness areas of any reasonable size are to be established in the Alps, in addition to the existing Avon Wilderness, it is virtually impossible to avoid some conflict with



existing grazing use. If the Council were to finally adopt the proposed wilderness areas identified in these recommendations, eight licensees would be affected. Seven of the licensees would be substantially affected.

In recognition of the importance of this issue, the Council is seeking community views in response to these recommendations on a range of options aimed at reducing or eliminating the impact on individual grazing licensees of designating additional wilderness areas in the Victorian Alps. The Council will also be having discussions with individual licensees who may be affected.

In order to facilitate community discussion and comment on this issue the Council has identified those parts of the Alps that it believes could be appropriately designated as wilderness areas and has outlined the recommendations it considers are required to protect them.

The following discussion outlines the current situation with respect to grazing in the Alps as well as each option proposed. It may be that there are other options and Council will consider other suggestions raised during the submission period.

#### Current Situation

During the Council's investigation of the Alpine Area in the late 1970s and early 1980s it was recommended that grazing be phased out of a number of defined areas within the Alpine Park System. Both the former Liberal Government and current Labor Government accepted these recommendations and grazing is to terminate on a consolidated portion of the Bogong High Plains and the Bluff this year (1991). Some 10 families out of approximately 95 are affected (to varying degrees) by this phase out.

In addition, the government, in an amendment to Council's Alpine Area Special Investigation Final Recommendations (LCC 1983), stated that future decisions about grazing in parks and reserves will be made in the light of government policies, taking into account its economic significance for individual graziers, information arising from research, environmental and recreational factors, and the traditional associations of families with the high country.

At the time of the creation of the Alpine National Park in 1989, an 'Agreement on provisions for grazing licences in the Alpine National Park' was framed and incorporated into the legislation for the park. In essence, the Alpine Agreement gives the current grazing licensees the right to obtain a seven-year licence, which subject to good performance is renewable. A licence may be transferred or assigned, with the consent of the Minister for Conservation and Environment after consultation with the Alpine Advisory Committee, to a member of a family of Mountain Cattlemen or any other approved person. The Department of Conservation and Environment and the Mountain District Cattleman's Association of Victoria are currently finalising conditions prior to the issue of the seven-year licences.

The Council appreciates that this agreement has been ratified by Parliament and is part of the legislation establishing the Alpine National Park.

#### Proposed Wilderness Areas

Six proposed wilderness areas recommended by Council have one or more licensees currently involved in grazing domestic stock. These are:

- A8 Mount Darling/Snowy Bluff
- A9 Razor/Viking
- A10 Davies Plain
- A11 Cobberas
- A12 Buchan Headwaters
- A13 Tingaringy

While the licensed grazing of these proposed wilderness areas is not significant on a regional or Statewide scale, if precluded it would affect most licensees in a significant way. See also the summary of findings of the socio-economic assessment report in Appendix IV. In some cases whole farm operations may no longer be viable. In total, some eight licensees could be affected, to varying degrees.

Council does not consider that the grazing of domestic stock is compatible with the land use objectives of wilderness areas. Council may resolve to recommend that grazing should be terminated as soon as possible, as



the areas currently proposed for protection are so important in terms of wilderness protection. This option would create significant problems for the licensees involved and, as with each of the first five options below, would require amendments to the existing agreement relating to grazing in the Alpine National Park or to the area to which the agreement applies. However, wherever possible, Council is seeking to reduce the impact that the exclusion of grazing would have on individual licensees.

### Possible Options

Council has developed a number of options to help reduce the impact on individual licensees. The Council's Final Recommendations could involve a combination of options to suit particular situations. The options include:

1. Changing the boundaries of proposed wilderness areas or erecting fencing to exclude stock from proposed wilderness areas.

Cattle preferentially graze varying environments included within a licensed grazing block and in certain circumstances natural features such as escarpments or steep terrain may form an effective barrier to stock movement. It may therefore be possible, in liaison with licensees, to identify more precisely the areas preferentially grazed and modify the boundaries of the proposed wilderness areas to avoid the main areas grazed, while still protecting the wilderness values of the areas of highest wilderness quality.

In some of the recommended areas it may be that the existing boundaries, as proposed, avoid the main areas grazed and, although some stock may occasionally stray into the wilderness area, grazing could continue on the bulk of the licensed area. It may be necessary for limited fencing to be used to reinforce natural boundaries, or alternatively fencing could be used to restrict cattle from an area that would otherwise be grazed. This would allow continued access to the remainder of the licensed grazing block. As all licensed grazing is seasonal, temporary fencing could be an option.

Such approaches would be applicable to reduce the impact on at least some licensed grazing in all of the proposed wilderness areas.

2. Seeking alternative licence areas

As most public land in the Alps that is suitable and available for the grazing of livestock is licensed for this purpose, there is little scope under existing arrangements to obtain alternative public land for grazing. A particular constraint is the need for public land licences to be in relatively close proximity to the home property or other licensed land.

This approach may, however, be applicable to help reduce the impact on the grazier holding the licence within the Mt Darling-Snowy Bluff area.

3. Government purchase

This would involve an evaluation of the value of the whole grazing enterprise (freehold plus licensed areas) and then, separately, calculation of the residual value after deducting the contribution to the enterprise of the excluded licensed public land. An ex gratia payment could be paid by the government to reflect the difference. Where the exclusion of licensed grazing would make the remaining farming operation unviable, the government may decide that purchase of the freehold land is appropriate.

Council is not advocating this approach, but is seeking community comment on this option.

4. Continuing grazing rights in the medium term

This option envisages that the current grazing licensees take up their entitlement to a 7-year licence and any subsequent renewals, but that transfer or assignment of the licence not be permitted.

Although this option would allow current licensees to continue to use the public land, eventually grazing would be phased out of the areas and they could then be scheduled as wilderness.



However, this may not occur for a considerable period of time, and in the interim other activities could further diminish wilderness values. Alternatively, they could be scheduled as wilderness areas on the condition that grazing is to be terminated in the future, but this would be inconsistent with the Council's views on wilderness and the provisions of the *National Parks Act 1975* relating to wilderness.

Alternatively, Council, in making its final recommendations, could change its proposed wilderness areas to reduce conflicts with grazing. Two additional options could thus be:

5. Propose no additional wilderness areas in the Alps.

This option would eliminate any impact on the grazing industry but significant areas of high wilderness quality would not be fully protected.

6. Reduce the number of areas proposed for wilderness area designation.

On the information obtained to date, the Council considers that all of the proposed wilderness areas in the Alpine Area contain wilderness values that are worthy of protection. However, it is also aware that some of these areas make a very significant contribution to a number of individual grazing enterprises. An option for the Council would therefore be to reduce the number of wilderness areas to avoid the most significant impacts.

#### Further Consultation

As indicated earlier, the Council's consultants have undertaken a socio-economic assessment of candidate areas and have already made contact with many of the graziers with alpine grazing licences. The information obtained was used in the consideration of the candidate areas, only some of which have been recommended as proposed wilderness areas.

Council intends to review the applicability of the above options with both the Mountain Cattleman's Association and individual graziers, and seeks comments on possible

approaches from all interested people to assist in its preparation of final recommendations.

## Proposed Wilderness Areas

The recommendations below apply to all proposed wilderness areas as generally shown on Map A and listed in Table 7. The recommendations are followed by a description of each area, a discussion of any resource implications, and a list of area-specific recommendations. Maps 1 to 12, included in this chapter, delineate the boundaries of the proposed wilderness areas more precisely.

Council has recommended 13 wilderness areas including the two existing areas, Big Desert and Avon; two additions to the existing Big Desert Wilderness Area; and two additions to the Pilot and Byadbo Wilderness areas of New South Wales. Three of the new wilderness areas are proposed in the Mallee, four in the Alps, and four in East Gippsland (including the only coastal wilderness area).

Table 7

### PROPOSED WILDERNESS AREAS

Rec no.	Wilderness area name	Map no.
A1	Sunset	1
A2	Big Desert	2
A3	Big Desert - northern addition	2
A4	Big Desert - southern addition	2
A5	North Wyperfeld	3
A6	South Wyperfeld	4
A7	Avon	5
A8	Mt Darling/Snowy Bluff	6
A9	Razor/Viking	6
A10	Davies Plain	7
A11	Cobberas	7
A12	Buchan Headwaters	8
A13	Tingaringy	9
A14	Snowy River	10
A15	Bowen	10
A16	Genoa	11
A17	Sandpatch	12

#### Note:

Recommendations A2 and A7 refer to existing wilderness areas, and A3, A4, A11 and A13 refer to additions to existing wilderness areas.

## Recommendations

### A1-A17

That the areas shown on Maps 1 to 12 and described below, be designated Wilderness Areas and be used to:

- (a) maximise the extent to which they are undisturbed by the influences of the European settlement of Australia

and

- (b) ensure the maintenance and protection of natural processes
- (c) provide opportunities for the public to enjoy inspiration, solitude, and self-reliant recreation in undisturbed natural settings

that

- (d) resource utilisation not be permitted, including timber and broombush harvesting, mining, grazing of livestock, beekeeping, and impoundment of water
- (e) additional vehicular tracks or roads, structures, or other facilities not be permitted within or on boundaries
- (f) upgrading of existing vehicular tracks or roads, structures or other facilities not be permitted within or on boundaries
- (g) motorised or mechanical transport, or transport reliant on animals not be permitted (unless required for an essential management purpose)
- (h) mineral exploration involving minimal disturbance to the natural environment be permitted
- (i) hunting not be permitted, except for deer hunting by stalking, which may be permitted seasonally, the timing and length of season to be determined by the Department of Conservation and Environment, in the areas specified below

that

- (j) measures required for

- (i) the prevention and control of fire
- (ii) the control and, where possible, eradication of non-indigenous flora and fauna
- (iii) emergencies relating to the safety of visitors

be permitted, provided that the operational techniques used have due regard for the protection and maintenance of wilderness values

- (k) wherever possible, existing vehicular tracks or roads, structures or other facilities be removed, and areas of these and other disturbances be rehabilitated as soon as practicable

and that they be managed in accordance with the principles outlined in Chapter C and permanently protected under the provisions applying to Schedule 2A of the *National Parks Act* 1975 and be managed by the Department of Conservation and Environment

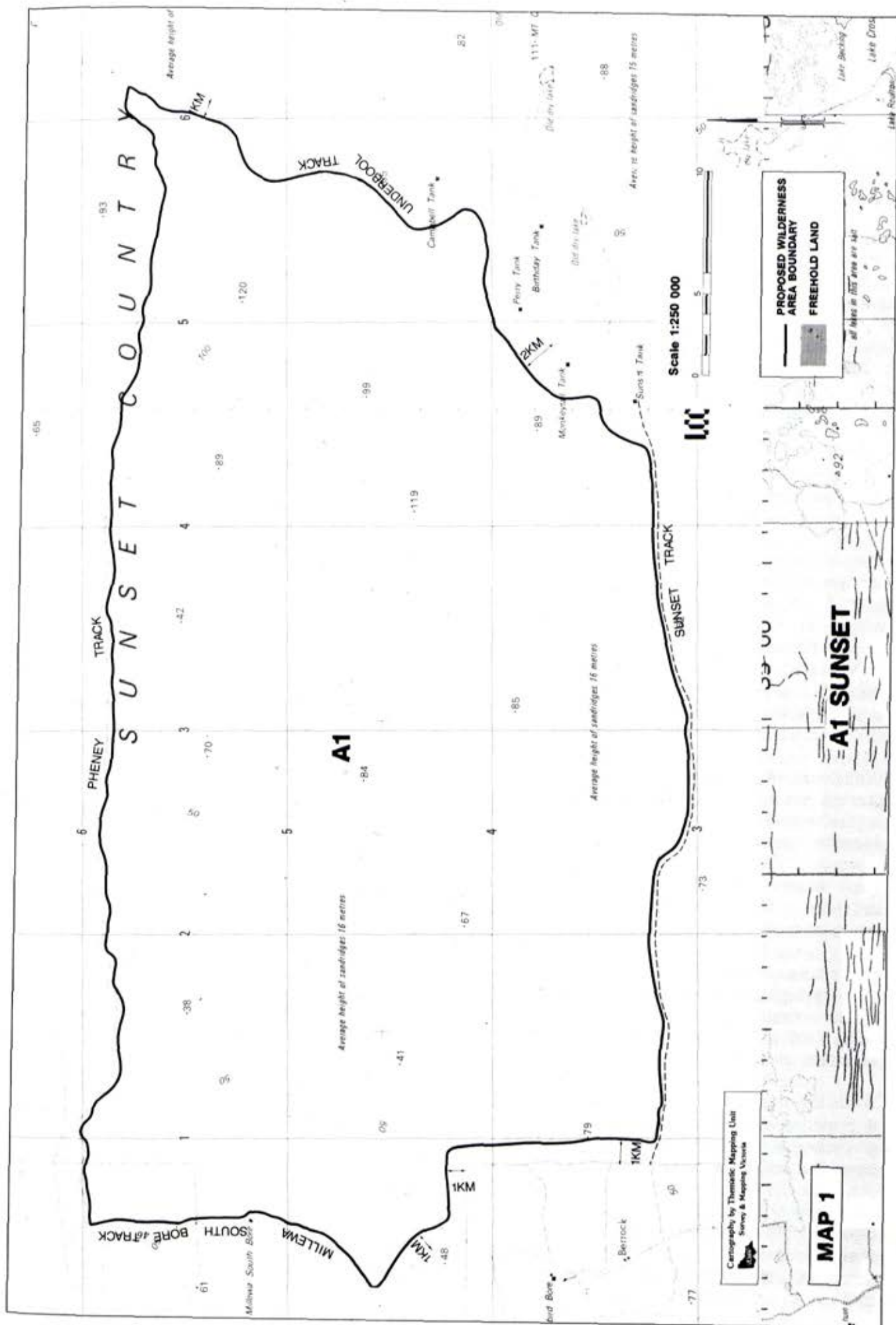
#### Notes:

1. Any area recommended by Council to be a wilderness area, would come under the legislative framework of the *National Parks Act*, either as a wilderness park or a wilderness zone. Both have the same protection under Schedule 2A of the Act.
2. Council is aware that the provision allowing for some forms of mineral exploration and the provision for deer hunting by stalking in three of the proposed wilderness areas will require amendment of the *National Parks Act* 1975.
3. Further explanation of permitted forms of mineral exploration is provided in Chapter C, Principles for Management of Designated Wilderness Areas.

### A1 Sunset Wilderness Area

Bounded in the south, east and north respectively by the Sunset, Underbool and Pheney Tracks, and in the west by the Millewa South Bore Track and the Berrook settlement, this is one of the largest undisturbed areas in the State, and indeed in south-east Australia.





The proposed wilderness area is entirely surrounded by the Murray--Sunset National Park. It encompasses more than 128 000 ha of mallee dunefields in which there is virtually no evidence of human disturbance such as vehicular tracks, structures or resource utilisation activities.

The character of the area is varied. Low calcareous dunes, ranging from 2 m to 10 m high and between 0.5 km and 5 km long, dominate the northern half, while high irregular siliceous dunes predominate in the south - many being 12 m to 16 m high. The different vegetation communities between the crests and swales of the dunes reflect changes in the underlying soils and the presence of soaks. The dunefield and other plant communities contain a number of rare plant species and support a diversity of mammals, birds, and reptiles; many of which are found only in the Mallee.

This wilderness is particularly significant because of the large area of undisturbed country. It encompasses areas that, together with those in the Big Desert, are as remote from settlement and roads as can be achieved in Victoria. Together with areas in the Big Desert it is the only area in the State where it is possible to be more than 5 km from any structure, track or utilisation activity.

While parts of this area have been covered by grazing licences in the past, little has been regularly grazed, or indeed ever grazed by domestic stock. Feral goats are found however. Except for one trig station and some unserviceable fencing there are no structures. There are three irregularly used vehicular tracks on the western margin.

The nature conservation values of the area are very high and are considerably enhanced by its remote and undisturbed qualities. Many land forms and vegetation types here have been extensively modified elsewhere.

While the area has no surface water resources it provides an important recharge area for groundwater. The undisturbed vegetation cover is a major contributor to this value.

The proposed wilderness also has a high capability for recreation dependent on remote settings, and its large expanse ensures extensive opportunities for experiencing solitude in an undisturbed natural setting.

While opportunities for bushwalking, nature study, and other associated activities are high, they are limited by the lack of natural sources of drinking water and in summer by high temperatures. Consequently, most use, which is currently low, takes place in winter and spring. The higher dune crests provide expansive views, and isolated sandplains offer campsites. There are, however, no established traverse routes.

Views across the wilderness can be obtained by climbing dune crests adjacent to vehicular tracks near its boundary. Some of the tracks adjacent to the proposed wilderness area are already used by commercial tour operators offering safaris and wildlife tours.

### **Resource Implications**

The whole of the proposed wilderness area lies within the Murray--Sunset National Park. One of this park's specific land-use objectives, as approved by the government following publication of the Council's Mallee Area Review Final Recommendations in August 1989, is to protect areas of high wilderness quality.

Mining and broombush cutting are precluded by previous Government decision and grazing is to be phased out. No area currently grazed or used for apiculture has been included within the boundary. The consultants concluded that there are no specific resource implications arising from the recommendations for the proposed area.

### **Boundary Alternatives**

One of the key issues considered by Council in determining possible boundaries was the relationship of any proposed wilderness area with the Murray--Sunset National Park; in particular the importance of ensuring linkages between the eastern and western portions of the park. Council also considered the need to provide for a range of recreation activities appropriate to the National Park, including vehicle touring opportunities.

One option considered by Council was to include a further area of high wilderness quality to the north of Pheney's Track which would add another 54 000 ha of little disturbed land. This area includes few structures (a trig station and disused fences), several infrequently used tracks and has not



been subject to past utilisation. Its inclusion would, however, require the closure of the western part of Pheneys Track, which is an increasingly popular four-wheel-drive through-route and is also used by some horse-riding groups. While an alternative route, through similar environments could be provided, by using South Bambil Track and a former mining exploration track about 12 km to the north, the latter track would need to be upgraded. In addition as Pheneys Track has recently been upgraded and is required for fire management purposes, it will be difficult to divert recreational traffic away from it. The Rural Water Commission also has a proposal to construct a groundwater observation bore on this section of Pheneys Track.

Another option would be to extend the proposed wilderness area further south beyond the Sunset Track. While much of this area has high wilderness quality, it includes some areas that have been cut for broombush. It also has at least one vehicular track ('Washing Machine Track') not previously mapped by Council. This option would also reduce the setback from freehold land. Sunset Track itself is well maintained, providing an attractive through-route and ready access for local communities and visitors to the national park. As it will be required for fire management it would be difficult to close to public use.

While not included in the proposed wilderness area, the area north of Pheneys Track (North Sunset) and south of Sunset Track (South Sunset) have been recommended as 'Other Areas with Remote and Natural Attributes' - see Chapter B.

## **Recommendation**

### **A1 Sunset Wilderness Area**

That the area of 128 100 ha, shown on Map 1, be used in accordance with recommendations A1--A17(a) to (k) above

and that

- (l) particular emphasis be given to the control of feral goats
- (m) unless inconsistent with (a) to (l) above, Council's previous recommendations for the Murray--Sunset National Park apply

- (n) Council's previous recommendations for Millewa South and Berrook Reference Areas apply

Note:

The Rural Water Commission has a proposal to construct additional groundwater monitoring bore adjacent to Pheneys Track. This bore should not be located within the proposed wilderness area.

### **A2,A3,A4 Big Desert Wilderness Area**

This area abuts the South Australia border and lies west of the Murrayville Track (Nhill--Murrayville Road). It forms the largest wilderness area proposed by Council.

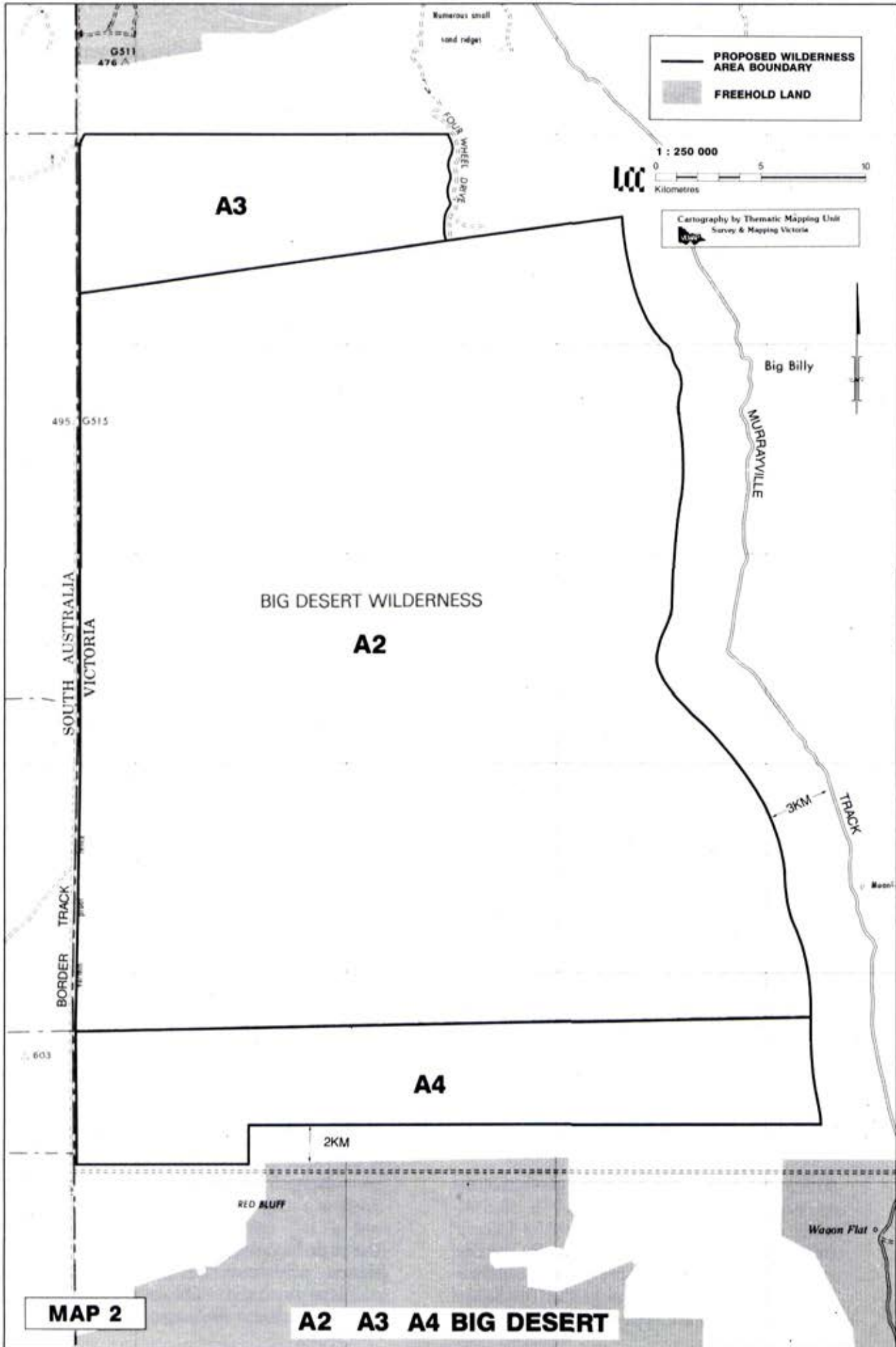
The major part (A2) coincides with the existing wilderness area as recommended by Council in its Final Recommendation of 1977 for the Mallee Area, as accepted by government and reaffirmed in its recommendations arising from the review of the Mallee area in 1989. It is currently a proclaimed wilderness area listed in Schedule 2A of the National Parks Act.

Wind-blown (Lowan) sands, with a relative relief of a few metres, comprise the bulk of the dunefields of this area which is part of the flat to gently undulating expanse of the Murray Basin plains. Individual parabolic dunes may, however, attain heights of 20 to 40 m. North-south trending Parilla sand dunes underlie the Lowan Sands and are exposed in places as hardened sandstone outcrops.

The various plant communities include dense mallee scrubs, tree-heaths, broad flat heathlands, low woodlands of scrub cypress pine, and stands of broombush. The diversity of fauna reflects the variety in structure and species composition of the vegetation. This diversity, allied to its unmodified condition contributes to the areas high potential for nature conservation.

While the area has no surface water resource, it provides an important recharge area for groundwater. The undisturbed vegetation cover is a major contributor to this value.

The area includes the most extensive tract of highest wilderness quality in south-eastern mainland Australia. The only track recorded was closed some time ago. No part of the





area has been subject to utilisation activity. Overall it offers exceptional opportunities for solitude and inspiration in remote, undisturbed semi-arid environments.

## **A2 Big Desert Wilderness Area**

This area of 113 500 ha coincides with the existing wilderness area.

### **Resource Implications**

The consultants concluded that there were no specific resource implications arising from the recommendation for the proposed area.

### **Recommendation**

## **A2 Big Desert Wilderness Area**

That the area of 113 500 ha, shown on Map 2, approved by the government following publication of the Final Recommendations for the Mallee Area in 1977 and subsequently confirmed by the government following publication of the Final Recommendations for the Mallee Area Review in August 1989, continue to be a wilderness area

that it be used in accordance with general recommendations A1--A17(a) to (k) above

and that

- (l) particular emphasis be given to the control of vehicle access to the edges of the wilderness area
- (m) no new apiculture sites be allocated between the wilderness area and the Murrayville Track, and where possible, those sites with bee forage areas that overlap the wilderness area, be relocated to other suitable sites.

See also notes following the recommendations for A3 and A4.

## **A3,A4 Additions to the Big Desert Wilderness Area**

Two areas are recommended for addition to the existing Big Desert Wilderness area. Both contain undisturbed areas of high wilderness quality that add to the values already found in the existing Wilderness.

In the north-west (A3), the proposed new addition (A3) extends from the north-eastern corner of the South Australian-Scorpion Springs Conservation Park to a vehicular track, then southward along the track to the northern boundary of the existing wilderness area. This adds some 11 200 ha. In the south, the proposed addition (A4) extends the existing wilderness area by a further 16 500 ha. The boundary is setback 2 km from freehold land. No vehicular tracks or structures have been recorded in these areas and neither has been grazed or is known to have been subject to any other form of activity.

The 3 km setback of the existing wilderness area boundary from the Murrayville Track is to be retained. Reduction in its width would require relocation of 4 apiculture sites (one being permanent); it is likely that it would be difficult to find alternative sites.

### **Resource Implications**

The proposed additions, other than a portion of the Red Bluff Flora and Fauna Reserve, are presently within State forest. Council, in its Final Recommendations for the Mallee Area Review in August 1989, since approved by the government, recommended protection for areas of high wilderness quality in State forest, by their inclusion on a schedule of special values. Broombush cutting, the main potential forest product, is no longer permitted on public land in the Mallee. No grazing licences have been granted and no apiculture sites occur. The additions, like the whole region, are, however, prospective for mineral sands, base metals and fossil fuels. In proposing these additions, the Council took into account the prospectivity of the area but also recognised that the remaining areas of State Forest in the Big Desert and the extensive areas of freehold land throughout the Wimmera and Mallee are also equally prospective. The consultants concluded that the areas are highly prospective in relation to the extraction of fossil fuels.

### **Boundary Alternatives**

One option would be to retain the boundaries of the existing wilderness area as recommended by Council in 1977. However, Council in its Mallee Area Review



Recommendations noted that its approach to wilderness would be reconsidered in the context of a State-wide investigation of wilderness. This investigation has now taken place.

Council, in its recommendations for the Big Desert Wilderness Area in 1977, envisaged that the public land bordering the wilderness area be managed as an external buffer against conflicting activities. However, vehicular use of minor formed tracks and the number apiculture sites have increased, so that tracks have gradually encroached towards the boundary of the existing Wilderness area. In accordance with the approach taken in these recommendations to the delineation of boundaries for all proposed wilderness areas, separate buffer areas have not been identified, nor have uses of buffers been defined. Rather, the boundary of a proposed wilderness area includes all land required to ensure the protection of wilderness values.

## Recommendations

### A3 Big Desert Wilderness Area - northern addition

That the area of 11 200 ha, shown on Map 2, be used in accordance with recommendations A1-A17(a) to (k) above

and that

- (l) particular emphasis be given to the control of off-road four-wheel-drive vehicle use.

### A4 Big Desert Wilderness Area - southern addition

That the area of 16 500 ha, shown on Map 2, be used in accordance with recommendations A1-A17 (a) to (k) above

and that

- (l) where possible, those sites with apiary forage areas that overlap the wilderness area, be relocated to other suitable sites.

Notes for A2, A3 and A4:

1. Council is aware that it is difficult to manage vehicular use in Mallee country, given its remoteness and the open nature of much of the vegetation.

Vehicular tracks in areas surrounding the wilderness should ideally link to each other or provide a loop. Dead-end tracks, especially those leading to the edge of the wilderness should be closed.

2. Apiary licences permit the occupation of a site (the physical location of the hives) and an associated range (the area over which the bees actually forage). 'Permanent' (annual) apiary licences usually provide for a 1.6 km radius range, while 'temporary' (usually 3 monthly) apiary licences provide for a 0.8 km radius range.
3. The Department of Conservation and Environment is currently preparing a management plan for the existing Big Desert Wilderness Park.
4. The proposed southern addition will necessitate changes to the boundary of the Red Bluff Flora and Fauna Reserve.

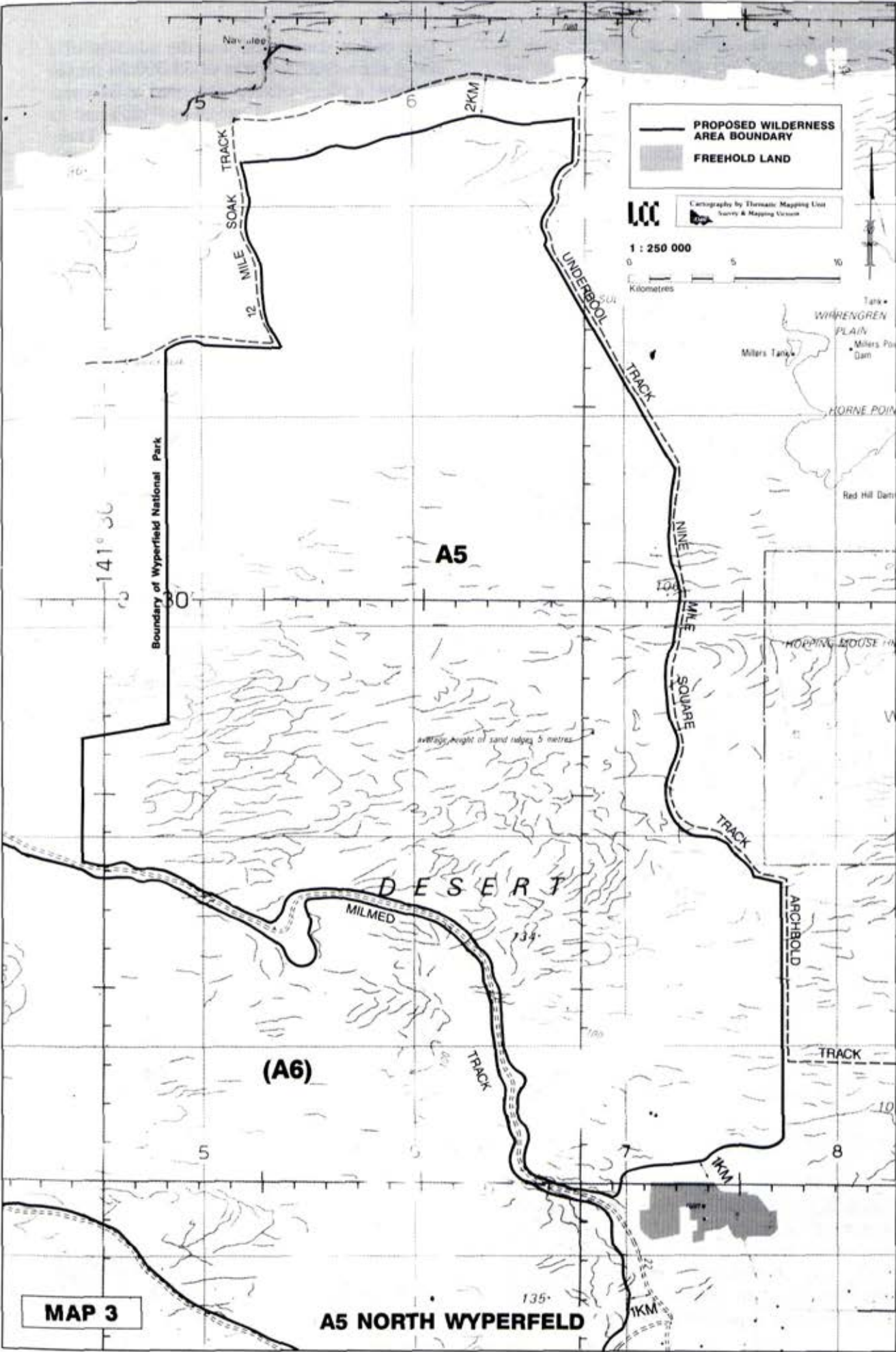
## A5,A6 Wyperfeld Wilderness Areas

These two wilderness areas encompass a vast expanse of little-disturbed Mallee dunefield country in the eastern Big Desert. They include extensive areas of land of very high wilderness quality.

Similar to the Big Desert Wilderness, these areas are mantled with wind-blown Lowan sands and support a range of plant communities. Stunted brown stringybark and yellow mallee communities occupy the crests of the large, irregular parabolic dunes which may be 20 to 40 m high. Yellow mallee and slender-leaf mallee with heathy understoreys occur on the heavier soils of the swales and lower dunes. Vast open sandplains here are dominated by sand-plain heath - an essentially treeless community of banksia and dwarf sheoak with a wide range of heath species. Pockets of broombush indicate the influence of underlying Parilla Sand ridges. A diversity of mallee fauna is found here and reflects the range of and quality of the vegetation communities.

Both proposed wilderness areas are very little disturbed, with few structures or tracks, and virtually no utilisation activity. They also encompass portions of the most remote parts of the State. Like the Big Desert and the proposed Sunset Wilderness Areas, these





areas contain places that are greater than 5 km from any form of structure, track or utilisation activity, a rarity in Victoria. They are also very remote (more than 15 km) from surrounding settlement or road access.

These wilderness attributes contribute to the high capability for nature conservation and offer exceptional opportunities for solitude and inspiration in a semi-arid environment. Opportunities for walking and nature study are extensive. Dune crests often provide broad views, as do elevated areas within the extensive sandplain heaths. Other sites of natural interest include occasional freshwater soaks and Parilla sandstone outcrops. Visitors using four-wheel-drive vehicles can obtain extensive views of the undisturbed country from tracks on the margins of the wilderness area. Mid-summer recreation is limited, however, principally by the high temperatures and lack of water.

#### **A5 North Wyperfeld Wilderness Area**

This area comprises 100 500 ha lies north of Milmed Track, within the northern section of the Wyperfeld National Park.

#### **Resource implications**

The whole of the area is within the Wyperfeld National Park. Council's recommendations for this park in the Mallee Area Review 1989, as approved by the government make specific reference to the protection of areas of high wilderness quality.

There are no licensed grazing or current broombush cutting operations in the area. In the north-east, two small areas have been previously harvested for broombush. No structures or formed vehicular tracks, nor other resource utilisation have been recorded.

The consultants concluded that there are no specific resource implications arising from the recommendations for the proposed area.

#### **Boundary alternatives**

One of the key issues to be considered by Council in determining possible boundaries was the relationship of any proposed wilderness area with the Wyperfeld National Park; and in particular, the importance of ensuring access to environments and features of the recently expanded park.

One option considered was the addition of a large little-disturbed area of 34 500 ha on the eastern margin of the proposed wilderness area, beyond Nine Mile Square Track and its southerly extension, Archbold Track. These tracks, which are presently only available for use by management vehicles, and a former vehicular track, Hopping Mouse Hill Track, which is now managed as a walking track, are the only disturbances recorded in this area. There are no structures or evidence of past utilisation activity. The addition of this area would, however, bring the boundary of the wilderness close to the more intensively used portion of the Wyperfeld Park around Outlet Creek. This could reduce potential opportunities for other park activities, including four-wheel-drive touring.

Another option considered was to add an area of 21 200 ha along the north eastern margin of the proposed wilderness area to the east of Underbool Track. This area has extensive areas of high wilderness quality and no disturbances have been recorded. The Underbool track is presently used for management purposes and to access a broombush cutting area, and has the potential to provide recreational access in the north of Wyperfeld National Park. If it were to be included the setback from some disturbed areas and other areas that may provide a focus for other types of park recreation, would be substantially reduced.

#### **Recommendation**

#### **A5 North Wyperfeld Wilderness Area**

That the area of 100 500 ha, shown on Map 3 be used in accordance with recommendations A1--A17(a) to (k) above

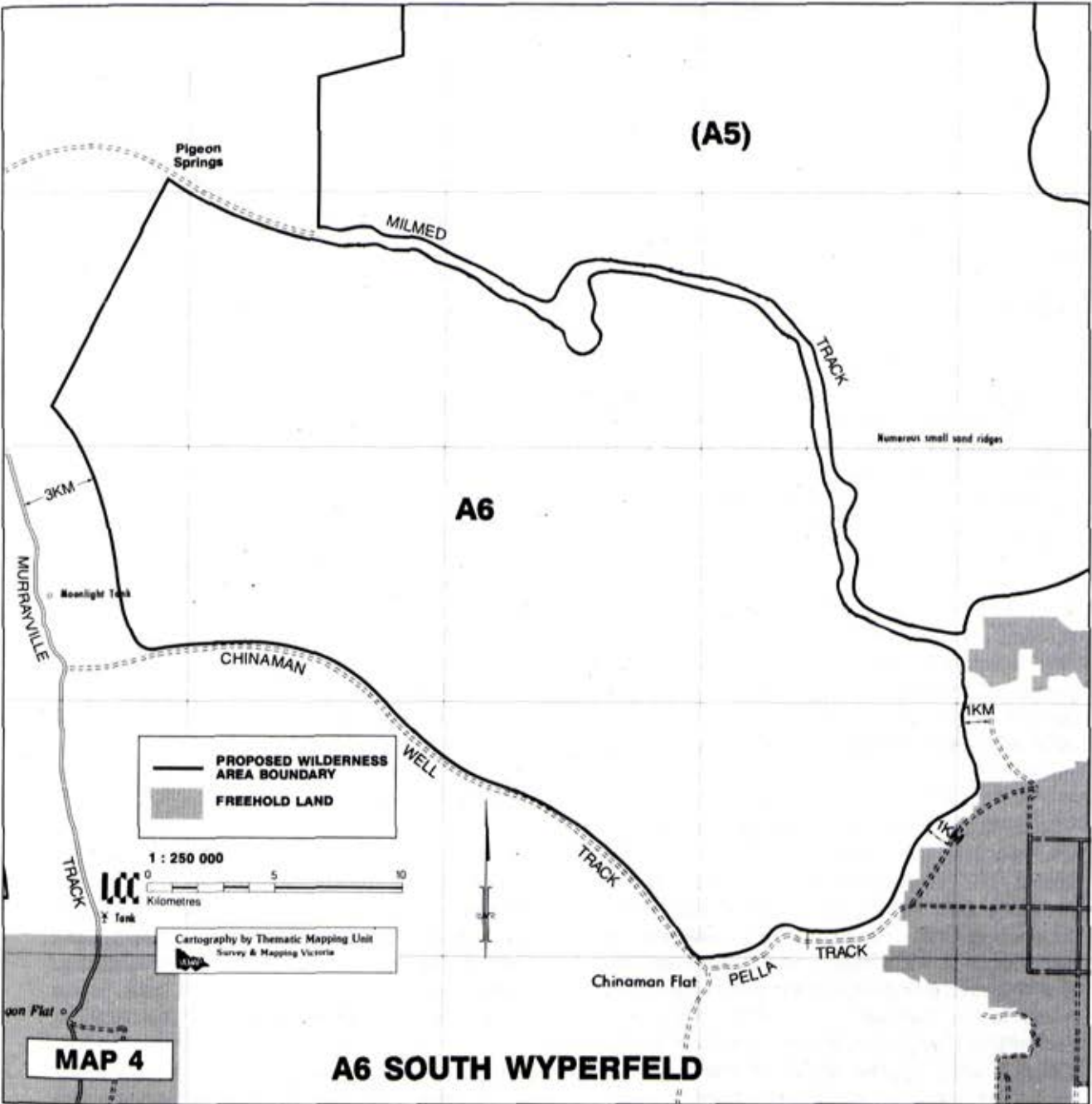
and that

- (l) where possible, those sites with apiary forage areas that overlap the wilderness area, be relocated to other suitable sites.
- (m) unless inconsistent with (a) to (l) above, Council's previous recommendations for the Wyperfeld National Park apply
- (n) Council's previous recommendations for the Broombush and Rudd Rocks Reference Areas apply.



Notes:

1. The Majorlock and Twelve Mile Soaks are not included in the proposed wilderness area.
2. The southern boundary of the proposed wilderness area has been set back 50 m from the Milmed Track. Wider areas at other sites near Milmed Rock and at Round Swamp (see map) are also excluded. It is essential that the Milmed track and any campsites associated with its use, be managed in a manner that minimises impact on the wilderness quality of the adjacent wilderness area. This may, in the future, involve controls on the number of groups using the track.
3. Apiary licences permit the occupation of a site (the physical location of the hives) and an associated range (the area over which the bees actually forage). 'Permanent' (annual) apiary licences usually provide for a 1.6 km radius range, while 'temporary' (usually 3 monthly) apiary licences, provide for a 0.8 km radius range.



## A6 South Wyperfeld Wilderness Area

This little disturbed area of 61 300 ha lies between the Milmed Track and the Chinaman Well Track. No utilisation activity has been recorded and no tracks or structures, other than one trig station, occur.

### Resource Implications

This area is within the 1989 addition to the Wyperfeld National park. Council's recommendations for this park in the Mallee Area Review, as approved by the government, make specific reference to the protection of areas of high wilderness quality.

The western boundary of the proposed wilderness has been set back from the Murrayville Track a distance similar to the existing Big Desert Wilderness Area, with the purpose of excluding current apiculture sites.

The consultants concluded that there are no specific resource implications arising from the recommendations for the proposed area.

### Boundary alternatives

One option would be to extend the area south of Chinaman Well track to include a further 31 700 ha of essentially undisturbed land. This area of high wilderness quality is presently in State forest. In its Mallee Area recommendations, the Council listed this area of high wilderness quality in the schedule of values to be protected.

The area is potentially prospective for mineral sands, base metals, and fossil fuels. While mineral exploration and mining are permitted in State forest, the inclusion of the portion south of Chinaman Well track in a wilderness area would make it unavailable for mining.

The addition of this area would also involve the closure, at least to public vehicular access, of Chinaman Well Track. This provides one of the few opportunities for four-wheel-drive vehicle-based visitors to experience a wide range of environments in the Wyperfeld National Park and a feeling of Victoria's 'outback'. This form of recreational experience was considered by Council as a special value of the enlarged park. At least one commercial tour operator

is known to use Chinaman Well Track as part of a Mallee four-wheel-drive trip, although Milmed Track would provide an alternative route. While present usage is relatively low, closure of Chinaman Well Track would place increasing pressure on Milmed Track for four-wheel-drive touring which may eventually require some regulation.

### Recommendation

## A6 South Wyperfeld Wilderness Area

That the area of 61 300 ha shown on Map 4 be used in accordance with recommendations A1--A17(a) to (k) above

and that

- (l) where possible, those sites with bee forage areas that overlap the wilderness area, be relocated to other suitable sites
- (m) unless inconsistent with (a) to (l) above, Council's previous recommendations for the Wyperfeld National Park apply

### Notes:

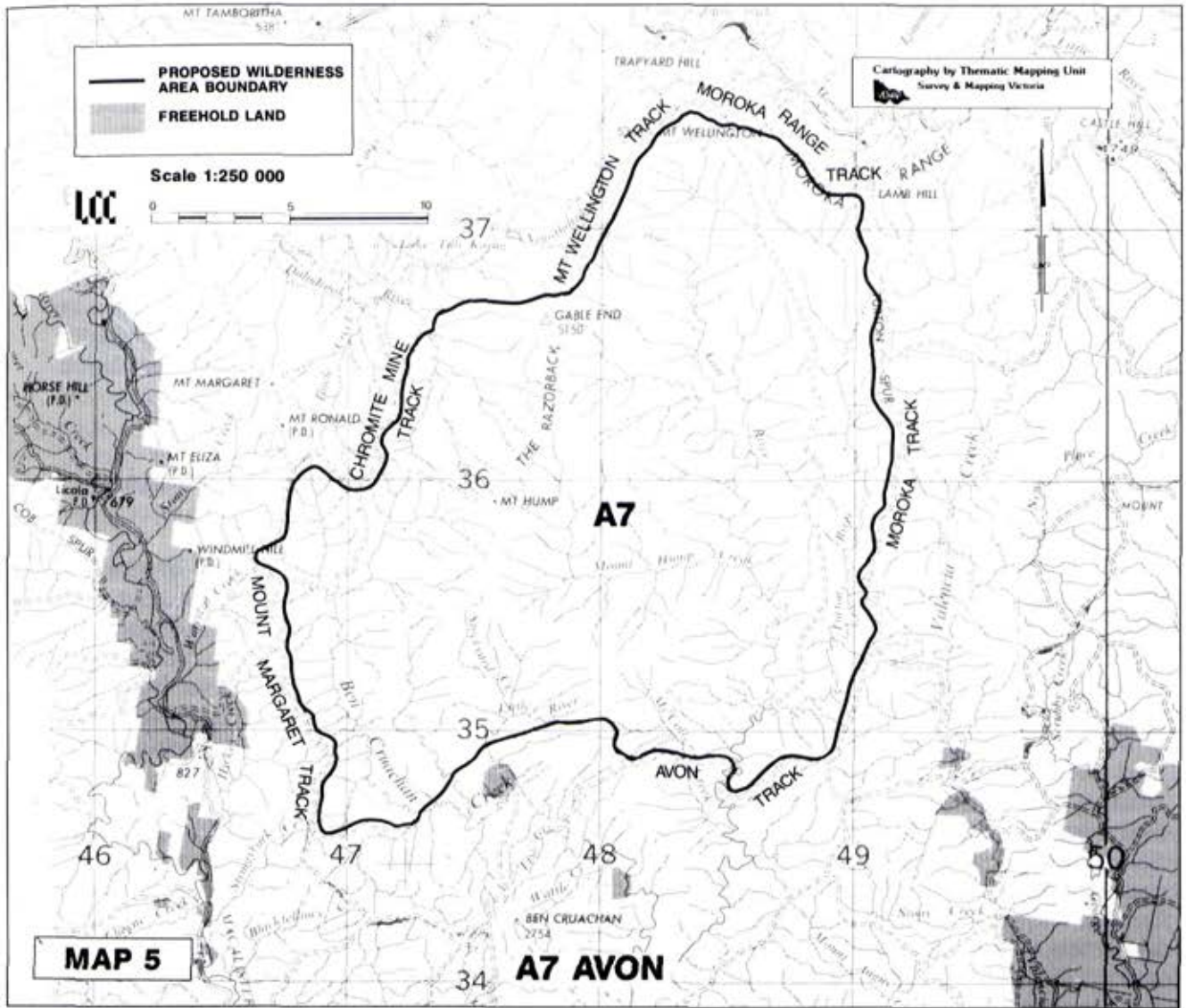
1. The Chinaman Flat Area, is not included within the proposed wilderness area.
2. The northern boundary of the proposed wilderness area has been set back 50 m from the Milmed Track. See note 2 following recommendation A5 above.
3. Apiary licences permit the occupation of a site (the physical location of the hives) and an associated range (the area over which the bees actually forage). 'Permanent' (annual) apiary licences usually provide for a 1.6 km radius range, while 'temporary' (usually 3 monthly), apiary licences provide for a 0.8 km radius range.

## A7 Avon Wilderness Area

This wilderness area corresponds to that recommended by Council in its Final Recommendations of 1983 for the Gippsland Lakes Hinterland Area and the Alpine Area Special Investigation, as accepted by government. This area has been proclaimed and is on Schedule 2A of the *National Parks Act 1975*.

The area contains portion of the Avon River catchment, including reaches of the Avon and





Turton Rivers and McColl Creek, and the headwaters of Ben Cruachan Creek. Its deeply dissected, rugged terrain remains substantially unaltered, with environments ranging from dry foothill forests to tall wetter forests on protected aspects. Riparian vegetation is found along the major streams.

The Avon Wilderness includes extensive areas of little-disturbed land and is one of the largest areas of high wilderness quality in eastern Victoria. There is evidence of past low intensity grazing along some river valleys and a small area of logging regrowth occurs on its northern margin. A number of minor vehicular tracks are located along ridges. These minor disturbances were included in the wilderness area to provide a logical management boundary. The area is

also quite remote, with parts 15 km or more distant from settlement, and up to 10 km or more from roads. A trig station on Gable End is the only structure recorded.

The area offers opportunities for solitude and for a range of challenging recreational activities. The untracked rugged divides such as the Razorback and Purgatory Spurs, and the major watercourses, such as the Avon and Turton, provide opportunities for experienced walkers. Gable End and the edges of Wellington Plateau provide some of the few opportunities for rock climbing in a remote setting to be found in Victoria. The area has been used to hunt sambar deer, although this use is now excluded under the wilderness provisions of the *National Parks Act 1975*. While some of the higher parts may carry



snow, its capability for cross-country skiing is low.

The undisturbed catchments of the proposed wilderness area contribute to the high water quality of the downstream water resource and are also important for *in situ* and downstream aquatic fauna and flora and riparian communities.

### Resource implications

The entire area is within an existing proclaimed wilderness area. The consultants concluded that there are no specific resource implications arising from the recommendation for the proposed area.

### Boundary alternatives

Other options included extending the wilderness eastwards to encompass the Valencia Creek catchment (part of which is disturbed); westwards to encompass contiguous areas around Tali Karng which while of high wilderness quality are intensively used for recreation; and to exclude an area from its south-eastern margin to provide for four-wheel-drive-based camping opportunities. However, it is proposed to retain the existing boundaries, which conforms with the Council's previous consideration of the wilderness values of the area.

### Recommendation

#### A7 Avon Wilderness Area

That the area of 40 000 ha shown on Map 5, as recommended by Council in its Gippsland Lakes Hinterland Area Study (1983) and its Alpine Area Special Investigation (1983), and as approved by government, be used in accordance with recommendations A1--A17(a) to (k) above.

and that

- (l) deer hunting, by stalking be permitted, with the timing and length of season to be determined by the Department of Conservation and Environment.

#### Notes:

1. Wellington Plateau, on the western margin of the wilderness area, is a sensitive alpine environment and provides an important part of the

remote setting of Lake Tali Karng, which is traditionally one of the most popular bushwalking destinations in the Victorian Alps. It is important that its remote and natural attributes are protected.

2. Council has recommended, in its proposed recommendations for the Rivers and Streams Special Investigation (1990) that the Avon, Turton and Dolodrook Rivers and Ben Cruachan Creek catchments be Essentially Natural Catchments. Recommendation A7 above, is consistent with the protection of the identified values.

#### A8 Mt Darling/Snowy Bluff Wilderness Area

The Mt Darling/Snowy Bluff Wilderness Area lies in the Victorian Alps. It covers an area of 41 700 hectares of the Wonnangatta and Moroka River catchments between the Howitt Plains Road, the Moroka Road and the Wonnangatta valley. It consists of largely untracked and little-disturbed rugged mountainous terrain, which offers outstanding opportunities for solitude and inspiration in natural settings. It includes the largest unroaded area remaining in the Alps. The proposed area is surrounded by the Alpine National Park.

The dominant landscape features include deeply incised valleys and steep escarpments surrounding the high plateaux of the Snowy Range, Mount Darling, Snowy Bluff and Mount Kent. The Moroka Gorge is also a significant feature. Many small waterfalls are active during the snow melt in spring. Vegetation comprises mainly wet and dry sclerophyll forest. There are alpine ash, broad-leaf peppermint and mountain gum forests on the higher slopes, with stringybark, swamp gum, and manna gum woodlands and forests at lower elevations and along the larger watercourses. Snow gum is found on the higher peaks and escarpment margins. The wide range of vegetation provides habitat for a diverse fauna, including many ground-dwelling and arboreal mammals.

Most of the deeply dissected valleys, precipitous escarpments, and forested slopes of the proposed wilderness area are essentially unmodified. It includes an extensive area free of structures and vehicular tracks. Not only is this the largest such area



in eastern Victoria, but it is the fifth largest in the State. Outside this trackless area there are only a few dead-end vehicular tracks, and no structures have been recorded. However, there are three small areas on the margins which include logging regrowth and cattle have grazed some of the river valleys and higher country. These have been included to create a sensible management boundary, and comprise a small part of the total area.

The range of little-disturbed vegetation communities, contributes significantly to the proposed wilderness area's very high value for nature conservation. A number of rare plant and animal species, and significant geological and geomorphological features are also recorded in the area.

The area is of moderate to high water production capability and the largely undisturbed catchments of the proposed wilderness area contribute to the high quality of the downstream water resource. They are also important for *in situ* and downstream aquatic fauna and flora and riparian communities.

The proposed wilderness area has high capability for several recreational pursuits, particularly walking and deer hunting, and for those seeking solitude and inspiration in a little-disturbed environment. Some of the cliffs and escarpments are occasionally used by rock climbers.

Many of the spurs and valleys are untracked, as are elevated areas of the Mt Darling ridge and between the Snowy Bluff and Mt Dawson. The Mt Darling range is one of only about half-a-dozen untracked snow gum woodland ridges remaining in the Victorian Alps. These are frequently used by experienced walkers and often form parts of trips to the Wonnangatta River on the edge of the proposed wilderness area, which is a traditional focus for bushwalkers. The recently re-opened McMillans Track, which passes through the southern portion of the area, is also used by walkers. The Wonnangatta and Moroka River valleys are considered prime hunting areas for Sambar deer.

Expansive views over the wilderness can be obtained from a number of points beyond its boundaries, primarily from the Howitt Plains Road near the western edge. Natural features

on its edge such as Bryces Gorge, Piemans Creek, Conglomerate Creek falls, Neilsons Crag, Moroka Gorge, Mt Dawson and Mt Kent, are readily accessible by relatively short walks from vehicular access outside the proposed wilderness area.

### Resource Implications

The whole of the proposed wilderness area is within the Alpine National Park. The area's use for wilderness recreation was one of the values recognised by Council in its 1979 recommendations for the Alpine Area.

One livestock producer utilises part of the area. The consultants concluded that livestock production is very minor, represented by one licensed grazing block used by one grazier as a reserve grazing area in times of drought, fire or other phenomenon which reduces production from other areas of the enterprise.

The licensed grazing area extends along the lower reaches of the Moroka River to the south of Snowy Bluff.

A detailed discussion of the grazing issue in relation to the proposed wilderness areas is provided on page 24. This includes a range of possible approaches to reduce the impact on affected licensees. (An additional licensed grazing area shown on the maps accompanying the descriptive report on the southern edge of the proposed wilderness area is not now used for licensed grazing).

A tour operator currently offers a horse-based tour which incorporates passage along the Moroka Glen Track to the junction of the Moroka and Wonnangatta Rivers. The tour operator affected operates a few tours each year involving, in total approximately 50 horses and 3-4 back-up vehicles per year, but tours involving this area are not conducted every year. This use would be precluded under the proposed recommendations.

The general area was identified by the consultants as being very important for deer hunting purposes - a permitted activity in this area under the proposed recommendations. The Moroka Glen Track provides ready vehicular access to part of the hunting area but this form of access would be precluded by the proposed recommendations. The consultants also identified that this track was



considered important for four-wheel-drive recreational usage.

The Moroka Glen Track is on the western margin of the area and is a dead-end vehicular track. It presently provides vehicular access to a number of campsites on the Moroka which, as the consultants identified, are mainly used by deer hunters. The exclusion of vehicular access via Moroka Glen Track does, however, create a more sensible management boundary using the escarpment margin bordering the Snowy Range.

### Boundary Alternatives

One option was to add an area of about 4700 ha at the northern extremity of the proposed wilderness area. It is mostly undisturbed and would provide a link to the proposed Razor/Viking Wilderness Area (A9) to the north, which encompasses the headwaters of the Wonnangatta River. It does, however, include a number of additional areas of logging regrowth and the major disturbance associated with the Zeka Spur Track, a heavily used recreational four-wheel-drive route. The Bicentennial National Trail, a focus for horse based recreation, would also be included. Thus both routes, for which no feasible alternative exist, would be eliminated. Discussions about the location and separation of the driving and riding routes in this area have already taken place and agreement reached between the land manager and the relevant recreation groups.

Another option considered by Council was to include an area of 680 ha on the eastern margin between Mt McAdam and Snowy Bluff. In this instance the area contains sites used by campers, particularly deer hunters. Including this area in the proposed wilderness would remove an incursion into the central part of the wilderness, but would significantly reduce vehicle based camping opportunities on a section of the Wonnangatta River.

### Recommendation

#### A8 Mt Darling/Snowy Bluff Wilderness Area

That the area of 41 700 ha, shown in Map 6, be used in accordance with recommendations

A1--A17(a) to (k) outlined above

and that

- (l) deer hunting by stalking be permitted with the timing and length of season to be determined by the Department of Conservation and Environment
- (m) grazing by livestock not be permitted
- (n) the defined walking track along McMillans Track be retained but not be upgraded
- (o) priority be given to the rehabilitation of the Moroka Glen Track.

and that

- (p) unless inconsistent with (a) to (o) above, where applicable, Council's previous recommendations for the Alpine National Park apply
- (q) Council's previous recommendations for the Mt McAdam reference area apply.

#### Notes:

1. Council is aware of a proposal to construct a footbridge across the Moroka River, near its confluence with the Wonnangatta River, to facilitate access by deer hunters during high winter flows. Such a structure would not be permitted within the proposed wilderness area.
2. The western boundaries of the proposed wilderness area are based on the break of slope at the top of the escarpments. They do not extend to the actual catchment divide which is ill defined given the flat-topped nature of the Howitt and Snowy Plains. It is important, however, that the area between the Howitt Plains Road (which nominally follows the divide) and the boundary to the wilderness area is managed in a manner that is consistent with the protection of values in the adjoining proposed wilderness area.
3. The Department of Conservation and Environment is preparing a management plan for the Alpine National Park.
4. Council, in its proposed recommendations for the Rivers and Streams



Special Investigation (1990) has recommended that the corridor of the Wonnangatta River, part of which is within the proposed wilderness area, be a Heritage River. Recommendation A8 above is consistent with the protection of the identified river values.

### A9 Razor/Viking Wilderness Area

The proposed Razor/Viking Wilderness Area straddles the Great Dividing Range in the western part of the Victorian Alps. It includes the dissected Catherine River valley, together with the wild, rugged headwaters of the Wonnangatta River. The distinctive landscape features of the Razor, The Viking and the Crosscut Saw, as well as the summit of Mt Speculation are also included. This wilderness area encompasses 21 000 ha of diverse environment and provides visitors a wide range of experiences.

Much of the area consists of highly dissected Ordovician sediments which have formed a rugged mountainous terrain with steep hillsides and sharp ridges, incised by numerous streams. The elevation range between the ridgetops and adjacent valley floors is up to 800 m. Tall open forests comprising narrow-leaf peppermint in association with manna gum and mountain gum predominate. Broad-leaf peppermint forests with heathy and tussock grass understoreys occupy the drier sites, with riparian forests along the major river valleys. Mature and regrowth alpine ash forests are found at higher elevations, with snow gum open forests on the higher ridges and spurs around Mt Speculation and towards Mt Howitt. These areas have alpine herbfields and heathlands on their summits. While the fauna of this part of Victoria has not been extensively surveyed, a wide range of species, reflecting the diversity of habitat, is known to exist.

The majority of the proposed wilderness area is little disturbed. It includes limited areas of logging regrowth on its margins east of Cobbler Lake and near Mt Speculation, but the great majority of the forests elsewhere are mature. The Catherine River valley and areas around Mt Howitt have been grazed in the past, with the lower part of the Catherine being the only area still subject to licensed grazing. There are two vehicular fire tracks

(a fire trail on the lower Catherine and a former logging track near Mt Speculation) but no structures have been recorded. The area is also very remote from settlement and major roads.

The nature conservation values of the proposed wilderness area are high given its variety of plant communities, which range from alpine herbfields to riverine forests, all of which are largely undisturbed. Levels of introduced fauna and flora are low. The area also has high capability for water production. The little-modified mountainous catchments provide an important water resource to the downstream water storage on the Buffalo River and are also important for *in situ* and downstream aquatic fauna and flora and riparian communities.

A wide range of recreational activity is undertaken; in particular, the area has a high capability for bushwalking and nature study. A number of walking routes and good campsites are available, although water sources are limited on the higher ridges. Both day trips and extended walking opportunities occur. Most of the ridges, spurs and minor peaks are untracked, as are sections of a number of the watercourses. A popular route, is the Alpine Walking Track along the Barry Mountains. Other spectacular and popular walking venues include the Razor and The Viking, the alpine herbfields and magnificent 360 degree views from Mt Speculation, the steep escarpments of the Crosscut Saw, and the Blue Hills range. The ridges and escarpments of the high country and the deeply incised streams, together with its remoteness and relatively undisturbed communities, all contribute to the area's high capability for providing opportunities for those seeking inspiration and solitude.

Opportunities for remote cross-country skiing for experienced skiers are found around Mt Howitt and Mt Speculation, and the cliffs of the Razor offer opportunities for remote rock climbing. The tributaries of the main river valleys are a focus for hunters of Sambar deer.

Spectacular views across the southern sector of the wilderness area can be obtained from Mt Howitt on the edge of the area and from nearby escarpments which are now a relatively short walk from two-wheel-



### MAP 6

**A8 MOUNT DARLING/SNOWY BLUFF**  
**A9 RAZOR/VIKING**



drive access. Commercial horse-riding tours also overview the wilderness from this point. A four-wheel-drive track (Speculation Track) on the western boundary provides ready vehicular access to a short walking route to Mt Speculation. Several commercial walking tours include parts of the wilderness area in their itineraries.

### Resource Implications

The majority of the proposed wilderness area is included in the Alpine National Park. Wilderness recreation values of the Catherine River--Viking area, and the remote and rugged qualities of the Catherine River valley and its attractiveness for bushwalking free of tracks, are values identified by Council in its previous recommendations for this park.

The only commercial activity undertaken within the proposed Razor/Viking wilderness area is livestock production. Although total livestock production from the affected area is very small, the consultants have concluded that precluding grazing from this area will have a substantial impact on the one affected grazing enterprise.

A detailed discussion of the grazing issue in relation to the proposed wilderness areas is provided on page 24. This includes a range of possible approaches to reduce the impact on affected licensees.

The only vehicular tracks included are currently not available for public use.

### Boundary alternatives

One option considered by Council was to include the area north of the Cobbler Lake--Abbeyard Track. This would encompass a further 9 000 ha of largely undisturbed dissected foothill forest. Within this area two vehicular tracks occur along two of the catchment divides. These tracks provide opportunities for four-wheel-drive access. Use of one of the tracks, the Cobbler Lake--Abbeyard Track, as a through route is, however, dependent on continued access through freehold land. Two small tributary valleys of the Dandongadale River on the margins of the area are grazed; and 25 ha near Cobbler Lake have been subject to past logging. No structures or other utilisation have been recorded. This area is popular for the hunting of Sambar deer, particularly hound

hunting. If the area were to be included in the proposed wilderness area, hunting would be restricted to stalking. (Hunting using hounds has previously been excluded from areas further south in the Alpine National Park).

The forests of this area include grade C+ sawlogs equivalent to some 0.4% of the regional sustainable yield of the Wangaratta Forest Management Area and it is prospective for minerals, such as gold. It would also encompass parts of two additional grazing licences currently held by one enterprise.

This option was not adopted, owing to the above factors. Council has, however, recommended that this area be another Area with Remote and Natural Attributes - see Chapter B.

### Recommendation

#### A9 Razor/Viking Wilderness Area

That the area of 21 000 ha, shown on Map 6 be used in accordance with recommendations A1--A17(a) to (k) outlined above

and that

- (l) deer hunting, by stalking, be permitted, with the timing and length of season to be determined by the Department of Conservation and Environment
- (m) grazing by livestock not be permitted
- (n) the defined walking track along the route of the Alpine Walking Track remain, but not be upgraded.

and that

- (o) unless inconsistent with (a) to (n) above, where applicable, Council's previous recommendations for the Alpine National Park apply.

#### Notes:

1. In the future, it may be necessary, for visitor numbers on the more popular walking routes to be controlled to ensure that opportunities for solitude are maintained and that campsites and walking routes are not degraded.



2. The Department of Conservation and Environment is preparing a management plan for the Alpine National Park.
3. Council, in its proposed recommendations for the Rivers and Streams Special Investigation (1990), has recommended that the Wonnangatta River, whose headwaters lie in this proposed wilderness area, be a Heritage River. Recommendation A9 above is consistent with the protection of the identified river values.

#### A10 Davies Plain Wilderness Area

This proposed wilderness area of 25 400 ha encompasses most of the Davies Plain Ridge from Tom Groggin southwards to Buckwong and McCarthy Tracks. It complements the protection afforded to the upper reaches of the Murray River within New South Wales, provided by the adjoining 92 400 ha Pilot Wilderness Area in the Kosciuszko National Park. This proposed wilderness area, combined with the existing wilderness area in New South Wales and the proposed Cobberas Wilderness Area (A11), jointly encompass 131 600 ha forming the largest mountainous wilderness in mainland south-eastern Australia.

The proposed Davies Plain Wilderness Area consists of the rugged Buckwong Creek valley and the deep valley of the Murray River, separated by the elevated Davies Plain Ridge. The vegetation includes alpine and subalpine herbfields and heathlands, with extensive areas of snow gum woodland on the higher ridges and plateaux. At lower elevations, montane forests of alpine ash and wet and dry sclerophyll forests occur which provide a wide range of habitat for wildlife such as small ground-dwelling and arboreal mammals.

The area is relatively undisturbed, with a sparse track network and few structures (the only structure recorded is the historic Davies Plain hut). However extensive areas are, or have been, subject to seasonal grazing by livestock, and feral horses are also present.

The proposed wilderness area is surrounded by forested public land and remote from settled areas. In fact, the eastern fall of the Davies Plain Ridge is the most remote area

from settlement in eastern Victoria (being almost 15 km distant).

The relatively undisturbed nature of the area contributes to the maintenance of its high value for nature conservation. It also has significant water resource value. High rainfall and its relatively unmodified nature contributing to the overall high water quality, which is also important for *in situ* and downstream aquatic fauna and flora and riparian communities.

The proposed wilderness area also provides a range of recreational environments and has high capability for activities such as bushwalking, nature study, and to a lesser extent canoeing, and remote cross-country skiing. There are untracked walking opportunities of the spurs leading into Buckwong Creek, the watercourses of which are also untracked. Davies Plain Ridge provides opportunities for remote walking and to a lesser extent remote cross-country skiing, against a spectacular backdrop of the Kosciuszko Main Range. Trout are sought in the Murray River and Buckwong Creek.

Given that much of the area is relatively remote and inaccessible, it has a high capability for those undertaking these activities to experience solitude and inspiration in natural settings.

#### Resource Implications

The proposed wilderness area is entirely within the Alpine National Park. Council in its previous recommendations for this area has noted that the environs of the Davies Plain remain in relatively undisturbed condition, that they offer opportunities for remote, wilderness-style recreation, and complements the adjoining Pilot Wilderness Area.

The consultants concluded that three activities will be adversely affected under the proposed recommendations for the Davies Plain Wilderness Area. These are livestock production, tour operations and four-wheel-drive recreation.

There are two graziers likely to be affected but the degree of impact is not known because of the fact that grazing areas outside the wilderness are contiguous with grazing areas inside the proposed wilderness area. These areas may no longer be able to be



grazed because of the problem of controlling cattle movements across the boundary. The consultants concluded that the impact of declaring these areas could therefore be significant in terms of individual graziers but in the context of State and regional economies would be very small.

One tour operator uses Davies Plain Track approximately 16 times a year for horse-based tours. The traffic along this track is approximately 200 horses per year. This tour operator is based in Khancoban in New South Wales, and bases its tours around the two attractions of Davies Plain and Cowombat Flat. The tour operator has suggested to the consultants that without access to the Davies Plain area much of their operation would have to be closed. The operator has, however, only recently been granted a permit on the understanding that there is no guarantee of future permits being issued as the current LCC investigation on wilderness may preclude this use.

The consultants have also identified that the area is important for recreational four-wheel-driving. The major track affected is the Davies Plain Track. Such use would be precluded under the proposed recommendations.

Council recognises that the proposed wilderness area will reduce four-wheel-drive and to a more limited extent horse-riding opportunities. While such usage is relatively recent the Davies Plain Track is an important 'through-route' used by recreational four-wheel-drivers. It is subject to seasonal closure. This track provides a challenging and scenic route linking the Benambra-Black Mountain Road with Tom Groggin. It passes through snow gum woodland and provides views across to the Kosciusko Main Range. A route further to the west across Mt Gibbo and Mt Pinnibar, however, provides an alternative through route with snow gum woodland environments and expansive views. The presence of an alternative route is seen by Council as an important factor in reducing the impact on four-wheel-drive touring opportunities.

### Boundary Alternatives

No boundary alternatives were considered for this area.

## Recommendation

### A10 Davies Plain Wilderness Area

That the area of 25 400 ha shown on Map 7, be used in accordance with recommendations A1-A17(a) to (k) outlined above

and that

- (l) grazing by livestock not be permitted
- (m) priority be given to the control of feral horses and other feral animals

and

- (n) the Victorian government continue liaison with the New South Wales government on the co-operative management of the adjacent wilderness areas in each State, as detailed in the Memorandum of Understanding on the Co-operative Management of the Australian Alps National parks.

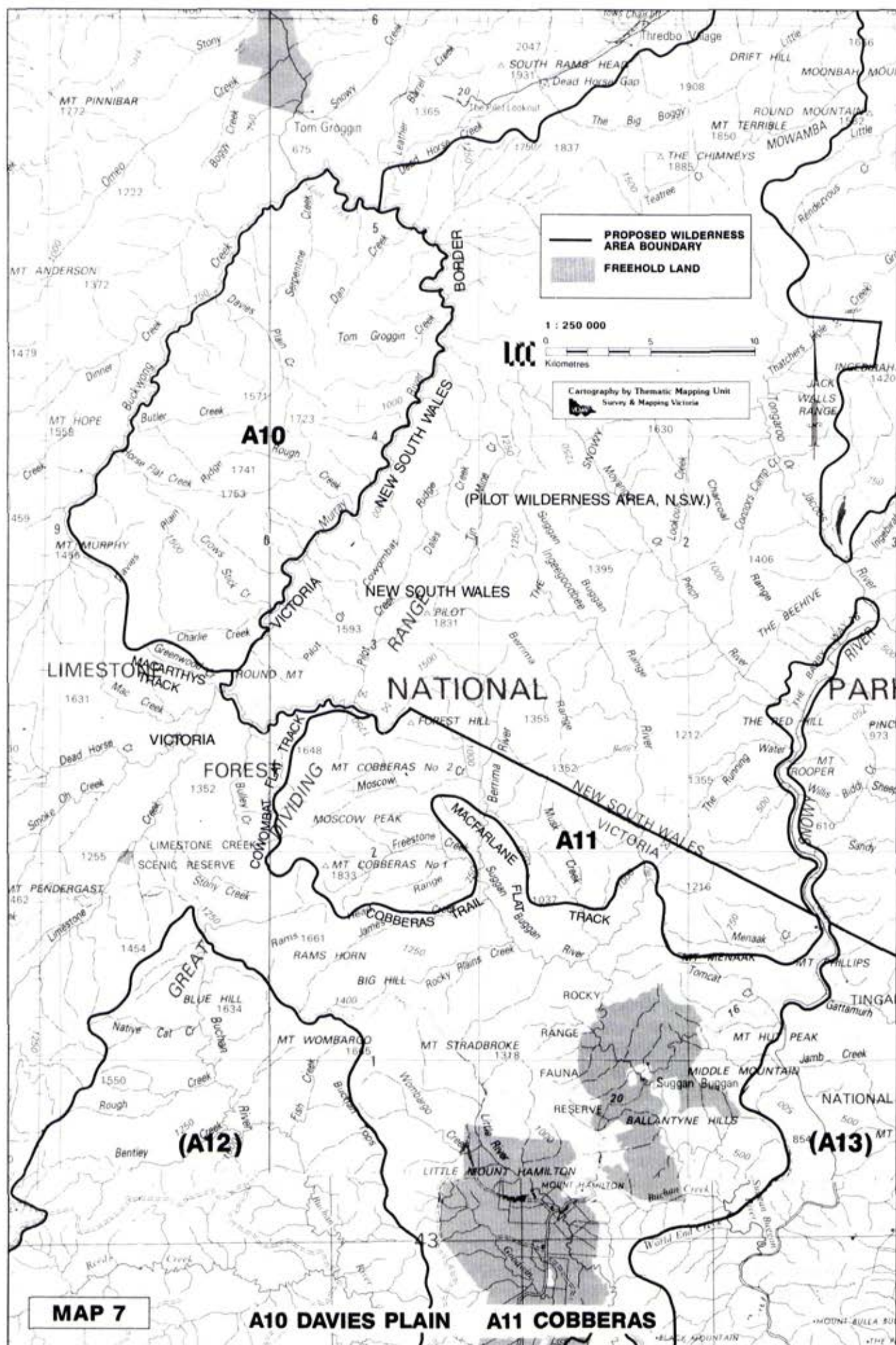
and that

- (o) unless inconsistent with (a) to (n) above, where applicable, Council's previous recommendations for the Alpine National Park apply.
- (p) Council's previous recommendation for the Tom Groggin Reference Area apply.

#### Notes:

1. Council is aware that in recent years the Davies Plain Track has become a relatively popular four-wheel-drive through-route and that an information program will be required to encourage use of the alternative route to the west.
2. There is potential to reduce the number of existing vehicular tracks, subject to minimum fire protection requirements, by rehabilitating some of the dead end tracks off the Davies Plain Ridge.
3. Grazing licences covering most of the Davies Plain Ridge area have traditionally been associated with the freehold property to the north at Tom Groggin. Following the recent sale of this property, the licences covering the area east of Buckwong Creek were not transferred to the new property owner







and this area will not be subject to grazing in the future.

4. The Department of Conservation and Environment is preparing a management plan for the Alpine National Park.

### A11 Cobberas Wilderness Area

This proposed wilderness area of 13 800 ha encompasses the Cobberas Range (which is one of the few remaining untracked mountain ridges in Victoria), and the headwaters of the Suggan Buggan River. It forms an extension and natural boundary of the contiguous 92 400 ha Pilot Wilderness Area of the Kosciusko National Park in New South Wales. The proposed wilderness area, combined with the existing wilderness area in New South Wales, and the proposed Davies Plain Wilderness Area (A10), jointly encompass 131 600 ha forming the largest mountainous wilderness in mainland south-eastern Australia. Council is of the opinion that the Cobberas area is not a wilderness area in its own right, but forms a logical addition to an important wilderness in New South Wales.

The proposed Cobberas Wilderness Area consists of rugged mountainous country with prominent peaks, dissected valleys and complex geology. The dry, rugged Suggan Buggan valley is composed largely of granite, whereas the peaks of the Cobberas are of volcanic origin. Small, grassy montane basins on the margins of the area such as Cowombat Flat and MacFarlanes Flat provide a contrasting environment. The vegetation includes small areas of alpine and subalpine heathlands and montane forest, with extensive areas of snow gum woodland on the higher ridges and plateaux. At lower elevations montane forests and woodlands are found, with rainshadow woodlands and open shrublands occurring further east. There are a wide range of habitats for wildlife including small ground-dwelling and arboreal mammals and several species of native fish occur in the streams within the area.

The proposed wilderness is relatively undisturbed, with a sparse track network and few structures. The only structures recorded are one hut, a trig station, and several historic border cairns. However extensive areas are, or have been, subject to seasonal grazing by livestock. Feral horses are also present.

The proposed wilderness area is surrounded by the Alpine National Park. It is mostly remote from settled areas, other than for a small cleared, but uninhabited, inlier of freehold land beyond the boundaries on the Ingeegoodbee River.

The area has very high value for nature conservation as it contains a wide variety of geological formations, significant landforms and vegetation, and a number of rare plant and animal species. The relatively undisturbed nature of the area is an important contributor to the maintenance of such values. Water production values are moderate given the rain-shadow associated with the Snowy River Valley.

The proposed wilderness area has high capability for activities such as bushwalking, camping, nature study, and to a lesser extent rock-climbing. The Cobberas--Cowombat Flat area is the focus for most visitors at present. The Alpine Walking Track follows a vehicular track on the western boundary of the wilderness into the montane basin at Cowombat Flat. This leads to The Pilot in New South Wales, which is a major destination of walkers. The prominent Cobberas Range, one of the highest mountain ranges in Victoria, rising to 1838 m, provides significant untracked walking opportunities. The grassy montane basins on or beyond the proposed wilderness are boundary at Cowombat Flat, and to a lesser extent MacFarlane Flat provide good opportunities for camping.

Two wheel drive visitors can obtain expansive views into the wilderness area across the Cobberas Ranges from the Benambra--Black Mountain Road and adjacent peaks such as Rams Horn.

### Resource Implications

The proposed wilderness area is entirely within the Alpine National Park. Livestock grazing is the only utilisation activity currently permitted in the area.

The consultants concluded that two livestock producers are affected by this proposed wilderness area and although total production in the context of State and regional economies is very small, both graziers depend significantly on grazing from these areas. One of the graziers owns a 19 ha



freehold parcel of land on the boundary which was purchased as means of serving these grazing blocks. It will be reduced in value if there is a reduction in grazing from surrounding areas. As with other wilderness areas, grazing areas both within and outside the candidate area are contiguous. Therefore, production could be reduced significantly for both graziers if grazing in the wider area is not possible.

A detailed discussion of the grazing issue in relation to the proposed wilderness areas is provided on page 24. This includes a range of possible approaches to reduce the impact on affected licensees.

Council is aware that short sections of tracks currently used by recreational four-wheel-drives are included in the proposed wilderness area, but the boundaries have been drawn to minimise conflicts with the main tracks used by four-wheel-drive vehicles.

### **Boundary Alternatives**

Council considered a number of options with respect to the protection of wilderness values in this area.

One option considered was to extend the area to include the land south east of the Cobberas Trail and MacFarlane Track, encompassing the headwaters of the Buchan River (Native Dog Creek), the Rams Head Range, and a number of additional major tributaries of the Suggan Buggan River, extending to the Benambra-Black Mountain Road. This option would add a contiguous area of 10 900 ha of relatively little-disturbed and rugged land. Most is subject to licensed seasonal grazing, and it would include three vehicular tracks - the Playgrounds Track, the Cobberas Trail and part of the MacFarlanes Flat Track (the latter two forming important 'through-routes'), and a four-wheel-drive vehicle based camping area at The Playgrounds. It would also preclude access by horse to the southern end of the Cobberas Range and Rams Head Range. While recreational four-wheel-driving and horse-riding are relatively recent uses of the area, these areas are becoming an important focus of activity. Council is also aware that there are few alternative four-wheel-drive through routes in this region.

Most of the area is presently subject to seasonal grazing. Its exclusion from the

proposed wilderness area may not reduce the impact on the licensees, as grazing may need to be removed from this area to ensure that cattle did not enter the proposed wilderness area.

Council also gave consideration to the inclusion of a contiguous area of 630 ha on the western margins, including and extending beyond Cowombat Flat Track. This option provides additional protection to the western fall of the Cobberas Range into the upper Murray River, and to the Pilot Wilderness Area in New South Wales. It would also enhance bushwalking opportunities by precluding recreational vehicular and horse-riding use of Cowombat Flat, which is a traditional focus of walking activity, and the Cowombat Flat Track, which forms part of the route of the Alpine Walking Track. This area was excluded because the Cowombat Flat area is already a point of interest to significant numbers of four-wheel drive users, horse riders and to an increasing extent, commercial tour operators.

### **Recommendation**

#### **A11 Cobberas Wilderness Area**

That the area of about 13 800 ha shown on Map 7, be used in accordance with recommendations A1--A17(a) to (k) outlined above

and that

- (l) grazing by livestock not be permitted.
- (m) priority be given to the control of feral horses and other feral animals
- (n) the Victorian government continue liaison with the New South Wales government on the co-operative management of the adjacent wilderness areas in each State, as detailed in the Memorandum of Understanding on the Co-operative Management of the Australian Alps National parks

and that

- (o) unless inconsistent with (a) to (n) above, where applicable, Council's previous recommendations for the Alpine National Park apply.



- (p) Council's previous recommendation for the Forest Hill Reference Area apply.

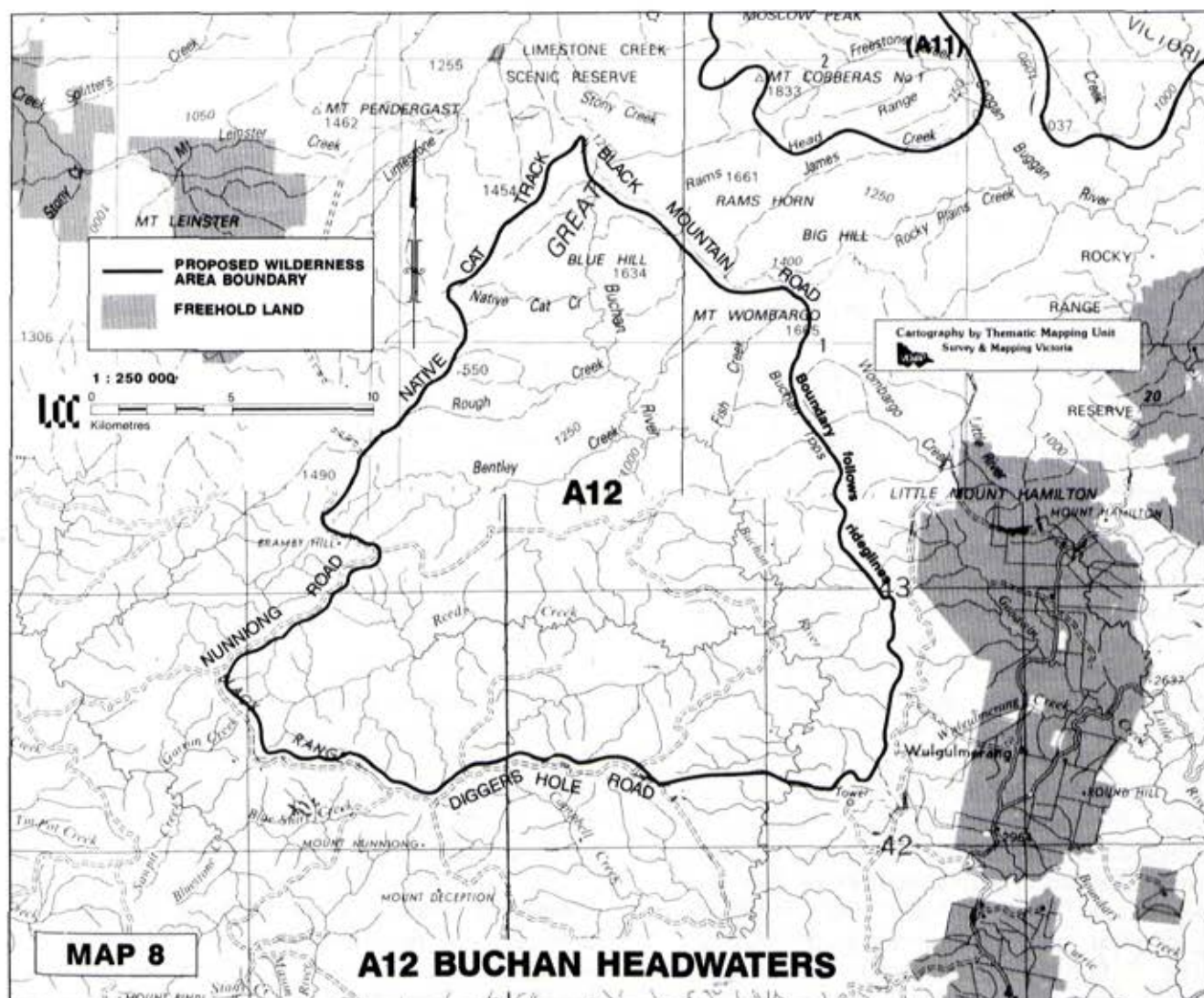
Notes:

1. The Department of Conservation and Environment is preparing a Management Plan for the Alpine National park.
2. Council, in its proposed recommendations for the Rivers and Streams Special Investigation (1990) has recommended that a corridor on the lower Berrima River, a minor part of which is within the proposed wilderness area, be a Heritage River.

Recommendation A11 above is consistent with the protection of the identified river values.

### A12 Buchan Headwaters Wilderness Area

The Buchan Headwaters wilderness area encompasses most of the rugged and relatively undisturbed headwaters of the Buchan River north of Mt Seldom Seen. It covers an area of 35 200 ha and is entirely within the Alpine National Park. It is bounded in the north by the Benambra-Black Mountain Road, in the west by the Native Cat Track along the Great Dividing Range





and Nunniong Road, to the south by tracks on the edge of the Nunniong tablelands, and in the east by the Wulgulmerang Tablelands north of Mt Seldom Seen.

The Buchan River flows through deeply dissected topography in the centre of the area, with more undulating tableland sections found in its western sector. Natural features of particular interest include the steep rugged terrain falling into the Buchan River and, in particular, the escarpments, waterfalls, rapids and minor gorges of the streams which drain the plateau surrounding Reedy Creek, the Reedy Creek chasm and snow grass plains such as the Forlorn Hope Plain. The Mt Wombargo block streams are also of interest.

The elevated tableland areas carry snow gum woodlands with grassy understoreys. Occasional alpine wet heathlands, grasslands and herbfields occupy poorly-drained sites. In the more sheltered valleys, montane forests with patches of wet sclerophyll forest are found. The lower areas which are generally drier, support extensive montane sclerophyll woodlands with a mixed eucalypt overstorey and heathy or grassy understoreys. Riparian forests of manna gum occur along the Buchan River and the lower reaches of its major tributaries.

Most of these communities are little disturbed; however, about 1600 ha of logging regrowth in the headwaters of Reedy Creek have been included to provide a logical catchment boundary. Parts of the northern and southern edges of the area, and of the Forlorn Hope Plain and surrounding areas, are seasonally grazed by livestock, with some grazing also occurring along the lower reaches of the Buchan River near Mount Seldom Seen. Feral horses are also present in the area. However, the dissected slopes and steep ridges are little grazed. Three vehicular tracks, established for fire protection purposes, traverse the area. No structures have been recorded.

The proposed wilderness area has a high value for nature conservation. There is a range of environments, most of which have been little disturbed, a number of rare and significant plant species, and significant geological and geomorphological features. The relatively undisturbed mountainous catchment of the area provides reliable flows and high water quality. These water

resources are utilised downstream for township water supplies, and are also important for *in situ* and downstream aquatic fauna and flora and riparian communities.

Walkers use the area for both day and overnight trips and parts have potential for remote cross-country skiing. High points on the Forlorn Hope Track and Native Cat Track provide extensive views and together with the area's natural features, contribute to the area's high capability for solitude and inspiration in a little-disturbed environment.

Extensive views across the area can be obtained from a number of accessible points on its edges. These include high points on the Native Cat Track, which is accessible to four-wheel-drive vehicles and horse riders (being part of the Bicentennial National Trail), and on Mt Seldom Seen. High points in the north of the proposed wilderness area are also accessible by short walks from the two-wheel-drive Benambra-Black Mountain Road.

### Resource Implications

The proposed wilderness area is entirely within the Alpine National Park. Grazing is currently a permitted use.

Five livestock enterprises will be directly affected by this wilderness area and the problem of contiguous grazing areas across the boundary could affect all of these as well as another enterprise. The consultants have concluded that the impact on the individual enterprises will thus be significant but that the loss in State and regional production will be minor.

A detailed discussion of the grazing issue in relation to the proposed wilderness areas is provided on page 24.

The consultants have also identified that one track (Forlorn Hope Track) of local importance to recreational four-wheel-driving lies within the proposed wilderness area. Such use will be precluded under the proposed recommendations.

Council is aware that closure of this track, together with two other vehicular tracks in the area would reduce opportunities for recreational four-wheel-driving. They are presently subject to seasonal closure.



## Boundary Alternatives

Two options were considered, but not adopted by Council.

One option would be to extend the boundary over a catchment divide to the north-west to include 6500 ha of the relatively little-disturbed headwaters of Limestone Creek. The entire area is however used for licensed grazing. Its inclusion would also involve the re-routing of the Bicentennial National Trail, the inclusion of another vehicular track, and a significant increase in the extent of perimeter roading (much of which may be subject to increased traffic associated with the Benambra base metal project site).

Another option would be to delete a 4200 ha section below the Sugarloaf Track. This would avoid the inclusion of one vehicular track and some grazed areas, but exclude a large area of little disturbed and rugged country beneath Mt Seldom Seen.

## Recommendation

### A12 Buchan Headwaters Wilderness Area

That the area of 35 200 ha, shown on Map 8, be used in accordance with recommendations A1-A17(a) to (k) outlined above

and that

- (l) grazing by livestock not be permitted.
- (m) priority be given to the control of feral horses and other feral animals
- (n) unless inconsistent with (a) to (m) above, where applicable, Council's previous recommendations for the Alpine National Park apply.

#### Notes:

1. Council is aware that an exploration camp has been established as part of the Benambra Base Metal Project, within 2 km of the western boundary of the proposed wilderness area, and that approval has been given to develop the associated 'Currawong' and 'Wilga' deposits (both about 7 km distant).
2. The highest reaches of the Buchan River lie outside the proposed wilderness area to the north of the Benambra-Black Mountain Road.

Council notes that the Proposed Management Plan for the Cobberas-Tingaringy Unit of the Alpine National Park envisages the development of defined camping areas in this area at Native Dog Flat for both vehicle and horse based campers. These have been excluded from the proposed wilderness area. It is important that this area is managed in a manner which recognises its proximity to the wilderness area.

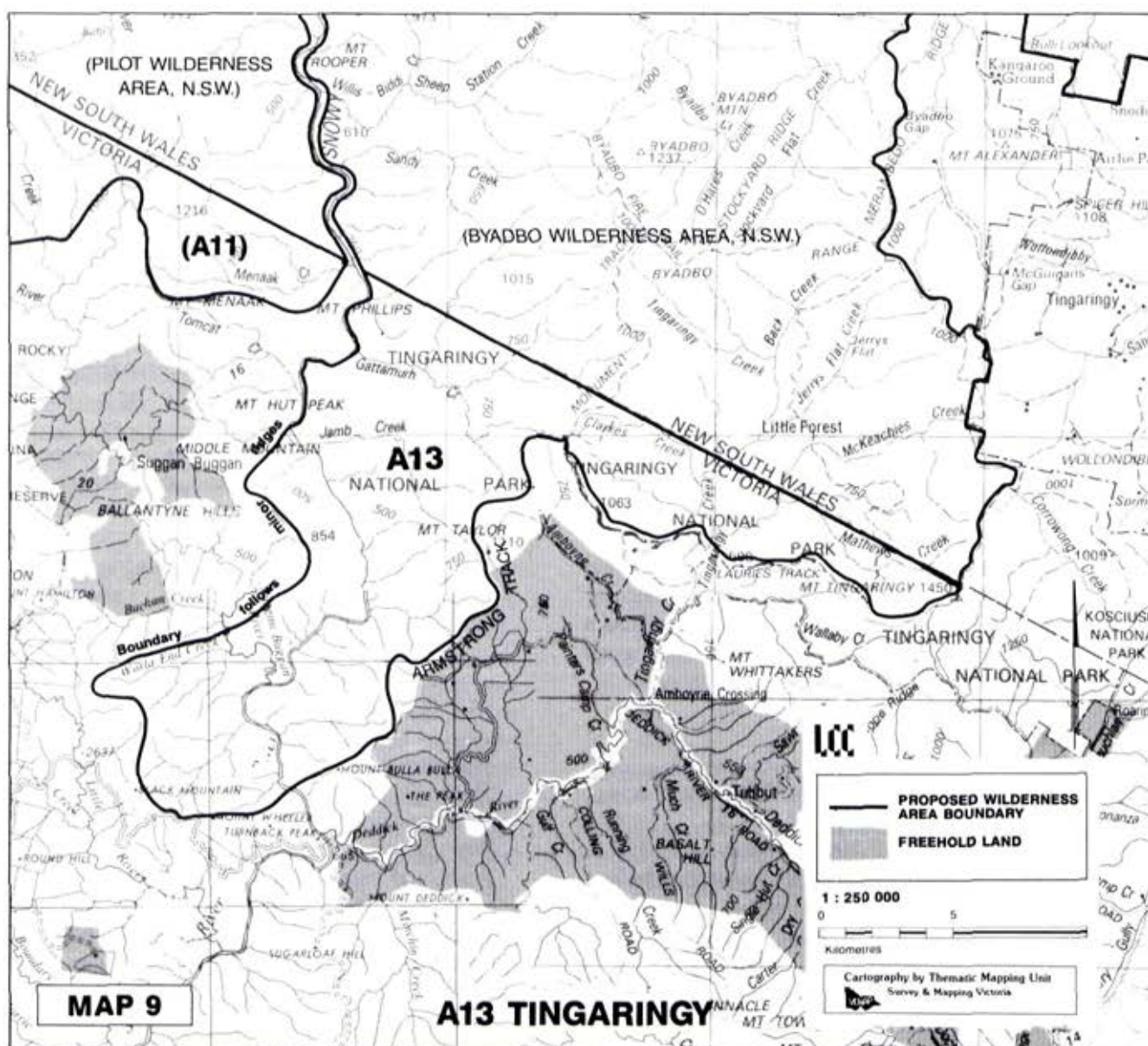
3. The Department of Conservation and Environment is preparing a management plan for the Alpine National Park.
4. Council in its proposed recommendations for the Rivers and Streams Special Investigation (1990), has recommended that a corridor on the Buchan River be a Heritage River. Recommendation A12 above is consistent with the protection of the identified river values.

### A13 Tingaringy Wilderness Area

The proposed Tingaringy Wilderness Area covers 20 900 ha adjacent to the Snowy River north of McKillops Bridge, extending to the New South Wales border north of Laurie Track and east to Mt Tingaringy. It forms an extension to the contiguous Byadbo Wilderness Area of the Kosciusko National Park in New South Wales. Together these areas form an outstanding, essentially undisturbed area of over 90 000 ha, encompassing environments ranging from the dry cypress pine communities of the Snowy River corridor to a wide variety of montane communities towards Mt Tingaringy. The rugged environs of the middle reaches of the Snowy, provide excellent opportunities for remote canoeing and, in the New South Wales sector, remote walking.

All of the Victorian sector consists of deeply dissected sedimentary rock rising to over 1000 m at lowest point - the Snowy River valley - to 1449 m at Mt Tingaringy, which is the highest mountain in East Gippsland. It encompasses the rugged incised valleys, gorges, cliffs and occasional sandy beaches of the Snowy River and lower Suggan Buggan River. Other than a small area of snow gum woodland, and a few small pockets of montane sclerophyll forest on the higher peaks, the vegetation is dominated by dry sclerophyll forest or rainshadow woodland.





A variety of fauna has been recorded, with species of particular interest including the tiger quoll, the brush-tailed rock-wallaby, and the common wallaroo.

The area has been very little modified. A small (illegally constructed) shelter and a few short vehicular tracks (mostly closed to public use) are the only disturbances recorded. Parts have been previously grazed by livestock, and feral horses are present. Introduced plants, largely brought in from sources in New South Wales upstream of the wilderness area, are found along the Snowy.

The proposed wilderness area complements recreational opportunities to the north. The

escarpments of Mt Tingaringy, the sandy beaches of the Snowy River, and the open untracked understoreys of the dry rainshadow vegetation being features of particular interest. Expansive views across the proposed wilderness area, and the adjoining wilderness in New South Wales can be obtained from Mt Tingaringy and along parts of the Buchan--Jindabyne Road.

#### Resource Implications

The proposed wilderness area is entirely within the Alpine National Park. Council, in its previous recommendations for this area (as Tingaringy National Park) has noted the importance of its rugged features for



recreation and recommended that the area be managed in such a way as to maintain its wilderness values.

Unless required as part of a feral horse control program, its present use by members of a local brumby running club would not continue.

The open understoreys of the woodlands found in the southern part of the area are used by local residents for horse-riding. This would not be permitted to continue under these recommendations.

One grazing enterprise will be affected if this wilderness area were declared. The consultants concluded that the overall production of the enterprise will be affected to a relatively minor degree but as the block adjoins freehold land owned by the grazier the block is strategically very important, particularly for winter management of breeding stock.

Licensed grazing occurs in the area west of the Snowy River upstream of its confluence with the Suggan Buggan River. The grazing licence also covers adjoining areas outside the proposed wilderness areas and it will be difficult to exclude grazing without fencing or removing grazing from the whole of the licensed block. The particular licensee is also affected by two other proposed wilderness areas. A detailed discussion of the grazing issue in relation to the proposed wilderness areas is provided on page 24. This includes a range of possible approaches to reduce the impact on affected licensees.

Part of the boundary of the proposed wilderness area abuts the public land/freehold land boundary. In every other case, the Council has deliberately avoided extending the wilderness boundary along the edge of freehold land. However, in this case, Council considers that the immediate catchment divide to the Snowy River is the logical management boundary for part of this area.

### Boundary Alternatives

The southern part of this wilderness area, to the south of Snowy Track and the Gattamurh Ford, could be excluded. This relatively narrow (between 5 and 7 km) extension of 12 900 ha is somewhat distant from the areas of

highest wilderness quality which are in New South Wales. Its exclusion would avoid the area subject to licensed grazing, and used by local horseriders. It would also avoid extending the wilderness boundary to the edge of freehold land.

However, this area of deeply dissected gorge country has only a few minor dead-end vehicular tracks and no structures. It is an area that is largely undisturbed and of high value for self reliant recreation, particularly canoeing and walking. While not remote from settlement or major roads, these factors have had little impact on its condition due to the area's rugged topography.

### Recommendation

#### A13 Tingaringy Wilderness Area

That the area of 20 900 ha, as shown on Map 9, be used in accordance with recommendations A1--A17(a) to (k) as outlined above

and that

- (l) grazing by livestock not be permitted.
- (m) the Victorian government continue liaison with the New South Wales government, on the co-operative management of the adjacent Wilderness Areas in each State, as detailed in the Memorandum of Understanding on the Co-operative Management of the Australian Alps National Parks.

and that

- (n) subject to (a) to (l) above, where applicable, Council's previous recommendations for this area, as accepted by government for the then Tingaringy National Park, apply
- (o) Council's previous recommendation for the Beehive Creek (formerly Gattamurh Creek) reference area, apply.

#### Notes:

1. Council is aware that occasional fuel-reduction burning of the dry northern slopes of this area is an important part of fire protection plans for this region.
2. Recreational use may need to be



- restricted to avoid conflict with peregrine falcon nesting sites
3. The Department of Conservation and Environment is preparing a management plan for the Alpine National Park.
  4. Council in its proposed recommendations for Rivers and Streams Special Investigation (1990), has identified two Essentially Natural Catchments in this proposed wilderness area: the catchments of Gattamurh Creek and the main tributary of Tingaringy Creek within Victoria; and has recommended that a corridor on the Snowy River be a Heritage River. The recommendations contained in A13 above are consistent with the protection of the identified river values.

#### **A14 Snowy River Wilderness Area**

#### **A15 Bowen Wilderness Area**

These proposed wilderness areas, which together cover an area of 44 500 ha, encompass two parts of one of the largest areas of high wilderness quality in eastern Victoria, and the largest area in East Gippsland. They include an area along the Snowy River, the entire catchment of Mountain Creek, New Country Creek, and the lower reaches of the Rodger River. The two proposed wilderness areas are separated by the Deddick Trail, a four-wheel-drive track which is external to the wilderness area boundaries.

The major geomorphic features are the Snowy River valley and the catchments of Mountain Creek and Rodger River, flanked by the isolated tableland remnants of the Gelantipy Plateau and the Bowen Range. Peaks within the areas, such as Mounts Gelantipy, Tower, Bowen and Monkey Top, rise above 1200 m. Most of the wilderness areas are highly dissected. The Tulloch Ard Gorge north of the Snowy's confluence with Mountain Creek is a spectacular landscape feature. The deeply dissected Mountain Creek catchment and, to a lesser extent the middle Rodger River catchment, contain associated waterfalls, cascades and minor gorges.

The vegetation is diverse, ranging from dry rain-shadow woodland in the Snowy valley to the alpine ash forests of the Gelantipy Plateau

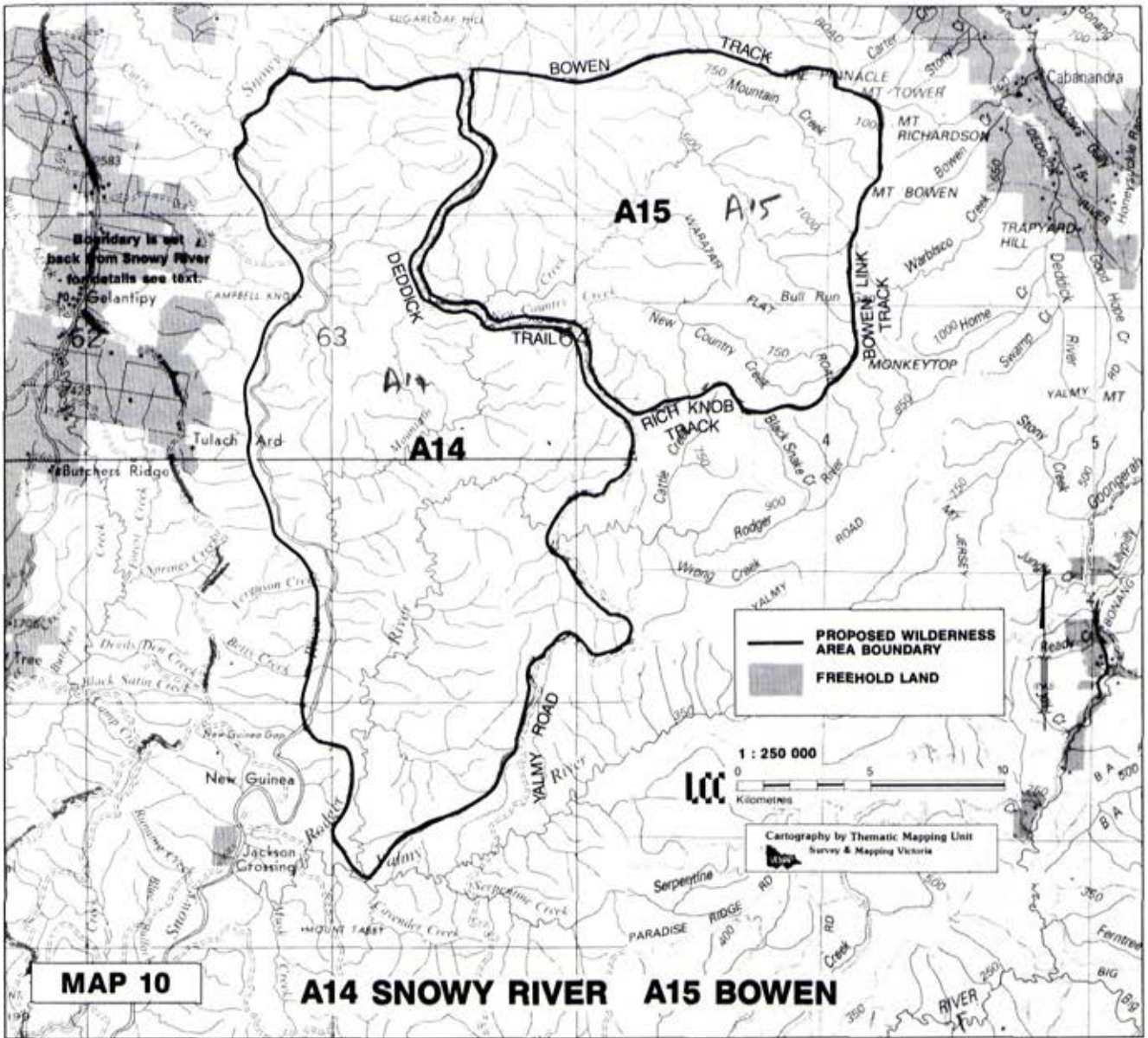
and snow gum woodlands on Mt Bowen. Dry and wet sclerophyll forests are the most extensive vegetation communities. The dry sclerophyll forests include a range of eucalypt species, with the overstorey of the wet sclerophyll forests dominated by mountain ash and alpine ash. Both typically have tall shrubby understoreys. A wide range of other plant communities occur: rainshadow woodland and patches of rocky outcrop open scrubland on dry slopes; snow gum woodlands on higher peaks; and riparian forests bordering the Rodger and Snowy Rivers and Mountain Creek. Isolated patches of rainforest are also present. These communities provide a diversity of habitat for a wide variety of fauna, including several rare or otherwise significant species.

Most of this extensive forest area is little disturbed. Detailed flora and fauna surveys have recorded a range of species that are known to be particularly sensitive to disturbance. However, localised infestations of blackberry occur along Mountain Creek New Country Creek, and the Snowy River as are a number of introduced mammals. Other weeds along the Snowy River have been brought in from upstream. There are four vehicular tracks in the areas, but no structures have been recorded. While small portions have been grazed in the past, such usage has been sporadic and generally of low intensity.

Both proposed wilderness areas include extensive areas of essentially undisturbed land and are entirely surrounded by vegetated public land. They are very remote from settlement and from major roads. The middle reach of Mountain Creek is the larger of only two areas in East Gippsland more than 10 km from a major or minor road. The area centred on Tulloch Ard Gorge is one of few areas in East Gippsland more than 3 km from any vehicular access.

Nature conservation values are high because of the diversity of vegetation and habitats and the variety of geological and geomorphological features such as the Snowy Gorge. There is the presence of significant plants such as spinning gum on Mounts Bowen and Tower; several rare plant species in the Snowy River Gorge; the habitat of the brush-tailed rock wallaby, and the tiger quoll; and a diverse range of native fish including the vulnerable grayling. The





essentially undisturbed state of both proposed wilderness areas enhances the nature conservation value.

Both areas receive high rainfall which contributes to the downstream flow of the Snowy River and is also important for *in situ* and downstream aquatic fauna and flora and riparian communities.

The proposed wilderness areas offer outstanding opportunities for a range of recreational activities in remote natural settings. A current focus of recreational activity is the Snowy River. It has spectacular scenic values and wild river recreation opportunities, and provides

probably the most popular long-distance white-water canoe trip in Victoria. It has major gorge sections, rapids and sandy beach campsites. Although water levels vary, it is usually canoeable year round. Entry and exit points are beyond the boundaries of the wilderness area. Opportunities for experienced walkers occur along the river beds and smaller gorges and cascades of Mountain Creek, the lower Rodger River, along the Bowen Range on the boundary, and on the Moonkan divide. Off-track walking is hindered by dense understoreys in the east, although walkers can traverse untracked spurs in the drier western portion of the area to gain views along the Snowy River valley or to gain access to its gorges.



A number of viewing points on the boundary of the area, such as the Bowen Ridge, are readily accessible by four-wheel-drive vehicle, with the Tulloch Ard Road on the western edge and the Yalmy Road on the eastern edge providing good dry-weather access.

### Resource Implications

Both proposed wilderness areas are included in the Snowy River National Park. Council's previous recommendations for this area have noted the opportunities for wilderness-style recreation in the essentially undisturbed environments of the Mountain Creek catchment, and that the northern portion of the park, because of its ruggedness and relative isolation, could be zoned for wilderness recreation.

The Deddick Trail, which is a regularly used four-wheel-drive track is excluded from the two proposed wilderness areas. It provides a popular route through the park and access to a diverse range of natural attractions and is on a relatively robust alignment.

The consultants indicated that one four-wheel-drive based tour operator uses Moonkan Track as part of a route for approximately 16 tours per year. These tours also incorporate bushwalking and camping activities. The Moonkan Track is also used for recreational four-wheel-driving. Under the proposed recommendations such use would be precluded.

### Boundary Alternatives

One option considered was to include the upper Rodger River, north of the Deddick Trail. It would add a further 9700 ha of essentially undisturbed land to the proposed wilderness area, and provide wilderness protection for the whole of the Rodger River catchment. While Council recognises the need to protect and divert intensive use from the sensitive and significant Waratah Flat area, it believes that it is desirable to permit a wider range of public access opportunities to the multi-aged ash forests of the upper Rodger River, which are a key feature of this national park.

Consideration was also given to extending the proposed Snowy River Wilderness Area

further south to include all the land west of the Yalmy Road to Varney Track, as well as the New Guinea Ridge. This would encompass an additional area of 4900 ha of high wilderness quality including the lower Yalmy River and Cavender Creek catchments, and the limestone caves of New Guinea Ridge. It would however, also encompass a vehicular access point to the Snowy River (Betts Creek Track), an area used by horse-riding groups (the lower Moonkan Track), and about the cleared land at 'Hicks', which is an important visitor node for the Snowy River National Park. This area is also prospective for minerals, and in the State forest part, includes presently available timber resources which represent 2.3% of the sustainable yield of the East Gippsland Forest Management Area. The Council considered that this area should be excluded from the wilderness proposals.

Another option would be to include an additional area of 2280 ha comprising the catchments of Swamp Creek and Good Hope Creek. These areas, while including mature forests, at least in their headwaters, are beyond the major catchment divide surrounding the areas of highest wilderness quality, and are separated from this area by a minor road. This area includes timber resources which represent up to 1.1% of the sustainable yield of the East Gippsland Forest Management Area. The government has announced its intention to add this area to the national park previously recommended by Council, however Council considered that this area should not be included in the wilderness proposals.

### Recommendations

#### A14 Snowy River Wilderness Area

That the area of 26 100 ha shown on Map 10, be used in accordance with general recommendations A1--A17(a) to (k) outlined above

and that

- (l) remote canoeing experiences on the Snowy River be retained
- (m) unless inconsistent with (a) to (l) above, where applicable, Council's previous recommendations for the Snowy River National Park apply



- (n) Council's previous recommendation for the Mountain Creek Reference Area, apply.

#### **A15 Bowen Wilderness Area**

That the area of 18 400 shown on Map 10, be used in accordance with general recommendations A1--A17(a) to (k) outlined above

and that

- (m) unless inconsistent with (a) to (l) above, where applicable, Council's previous recommendations for the Snowy River National Park apply
- (n) Council's previous recommendation for the Gelantipy Plateau Reference Area apply.

#### **Notes:**

1. The Deddick Trail, which lies between the two proposed wilderness areas, is excluded from these recommendations. This vehicular track was considered to provide the best route through the national park for four-wheel-drive based visitors. To ensure that usage remains within the carrying capacity of the existing standard of the track, and that opportunities for remote driving experiences are maintained, a permit system may be required in the future. Vehicle based camping at the crossing of Mountain Creek may be permitted at the discretion of the land manager.
2. Council intends to investigate alternative boundary alignments for the western edge of the proposed Snowy River Wilderness Area, with a view to including the steep slopes of the Snowy River corridor, together with some of the adjacent tributary gorges, but at the same time ensuring that the wilderness boundary does not abut freehold land.
3. The Department of Conservation and Environment is preparing a management plan for the Snowy River National Park.
4. Council, in its proposed recommendations for its Rivers and Streams Special Investigation (1990), has recommended that a corridor on the Snowy River be a Heritage River. It has also identified the catchments of Mount Gelantipy Creek, Mountain

Creek, and the Rodger River as Essentially Natural Catchments. Recommendations A14 and A15 above are consistent with the protection of the identified river values.

#### **A16 Genoa Wilderness Area**

This proposed wilderness area embraces 20 400 ha of remote country on Victoria's border in far East Gippsland. It includes part of the fall of the Genoa River from Mounts Coopracambra and Denmark, which encompass one of the largest areas of high wilderness quality in East Gippsland. The area is contiguous with the 6100 ha Nungatta National Park in New South Wales, the total area of which is being considered by the New South Wales government as a possible wilderness area.

Most of the area consists of mountainous terrain, with the prominent peak of Mt Coopracambra rising to over 900 m. A prominent escarpment extends from Mount Merragunegin, 15 km into New South Wales. The untracked peaks, and the meandering gorge of the Genoa River with its overhanging sandstone ledges, waterfalls and cascades, are all features of special interest.

The vegetation of the Genoa River catchment is dominated by dry sclerophyll forests with a range of eucalypts in the overstorey and usually sparse understoreys of grasses and low shrubs. To the south, the vegetation is dominated by lowland sclerophyll forest with silvertop and white stringybark being the main overstorey species. Patches of wet sclerophyll forest are found in more sheltered areas with riparian forests occurring along the Genoa River. Heathland rich in species occurs in the Black Jack Gully and Murmuring Creek catchments.

The proposed wilderness area has not been subject to timber harvesting, regular grazing or other forms of utilisation. Other than one minor vehicular track, there are no disturbances or structures recorded. Few introduced plants or animals have been recorded, although willows and some other species have self sown from sources in the headwaters of the Genoa River beyond the proposed wilderness area in New South Wales.



The area is remote from both settlement and roads and with the totally unroaded Nungatta National Park in New South Wales, it forms the second largest untracked area in East Gippsland.

Nature conservation values are very high. It incorporates the site of international and national geological and geomorphological significance in the Genoa River Gorge where fossils of great scientific interest have been located; a major site of botanical significance which includes the sandstone flora of the Genoa River valley. The protection of many of these nature conservation values is enhanced by the area's wilderness setting.

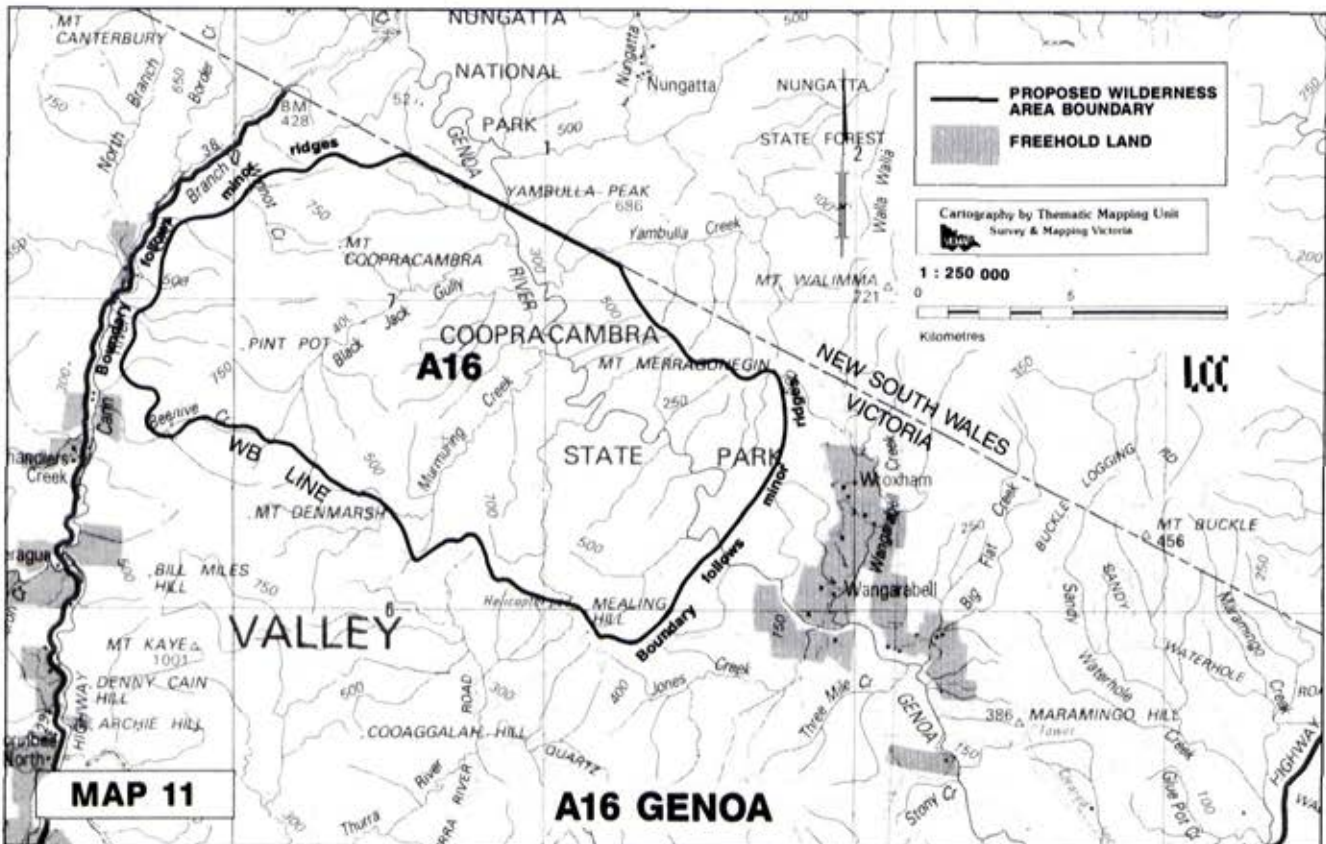
The proposed wilderness area has a high capability for self-reliant recreation and inspiration in remote natural settings. Opportunities for off-track walking are outstanding, with challenging walking routes to peaks such as Mt Coopracambra, and the walking route along the watercourse of the Genoa River, during low flows.

Dry-weather two-wheel-drive vehicular access outside the proposed wilderness area provides ready access to Mealing Hill and its spectacular views which provide vistas of the Genoa Valley, into New South Wales to Nungatta Mountain, as well as southward across the Thurra headwaters to Mt Kaye and Cooagalah Hill.

### Resource Implications

The proposed wilderness area is entirely within the Coopracambra-Kaye National Park. Council, in its previous recommendations for this area has noted that the undisturbed nature of much of the park provides opportunities for wilderness-style recreation - in particular, the Genoa River Gorge and its surrounds, which also offers some spectacular scenery.

The proposal would exclude public vehicle access from the Yambulla Creek Track a four-wheel-drive track leading towards the middle reaches of the Genoa River.





The consultants concluded that there are no specific resource implications arising from the recommendation for the proposed area.

### Boundary Alternatives

One option considered by Council was to add an area of 8500 ha encompassing Mounts Kaye and Denmarsh, the west branch of the Thurra River and the western flank of Cooagalah Hill. This area includes untracked peaks, little disturbed riparian forests, populations of rare and uncommon species. It also offers outstanding opportunities for challenging off-track walking and would add an extensive contiguous area of little-disturbed land to the proposed wilderness. It would, however, involve the closure of the WB Line, which is a minor two-wheel-drive road currently open to public use. The road would however need to be maintained for access by management vehicles.

While this option was not adopted, Council has recommended that this area be an Other Area with Remote and Natural Attributes - see Chapter B.

The area of State forest in the headwaters of the Thurra River (East Branch) was also considered as a possible addition, but this would have necessitated the inclusion of three previously logged areas (covering 228 ha) and timber resources of 124 600 cu.m spread over 2603 ha, which represents 3000 cu.m per year or 1.7% of the sustainable yield of the East Gippsland Forest Management Area. The area also has some mineral potential.

### Recommendation

#### A16 Genoa Wilderness Area

That the area of 20 400 ha, shown on Map 11 be used in accordance with the recommendations A1--A17(a) to (k) for wilderness areas outlined above

that

- (l) priority be given to the control of willows on the Genoa River
- (m) the government pursue discussions with the New South Wales government with a view to seeking agreement on the co-operative management of the abutting Nungatta National Park

and that

- (o) unless inconsistent with (a) to (m) above, where applicable, that Council's previous recommendations for the Coopracambra--Kaye National Park apply
- (p) Council's previous recommendations for the Yambulla, Merragunegin and Winnot Creek Reference Areas apply.

#### Notes:

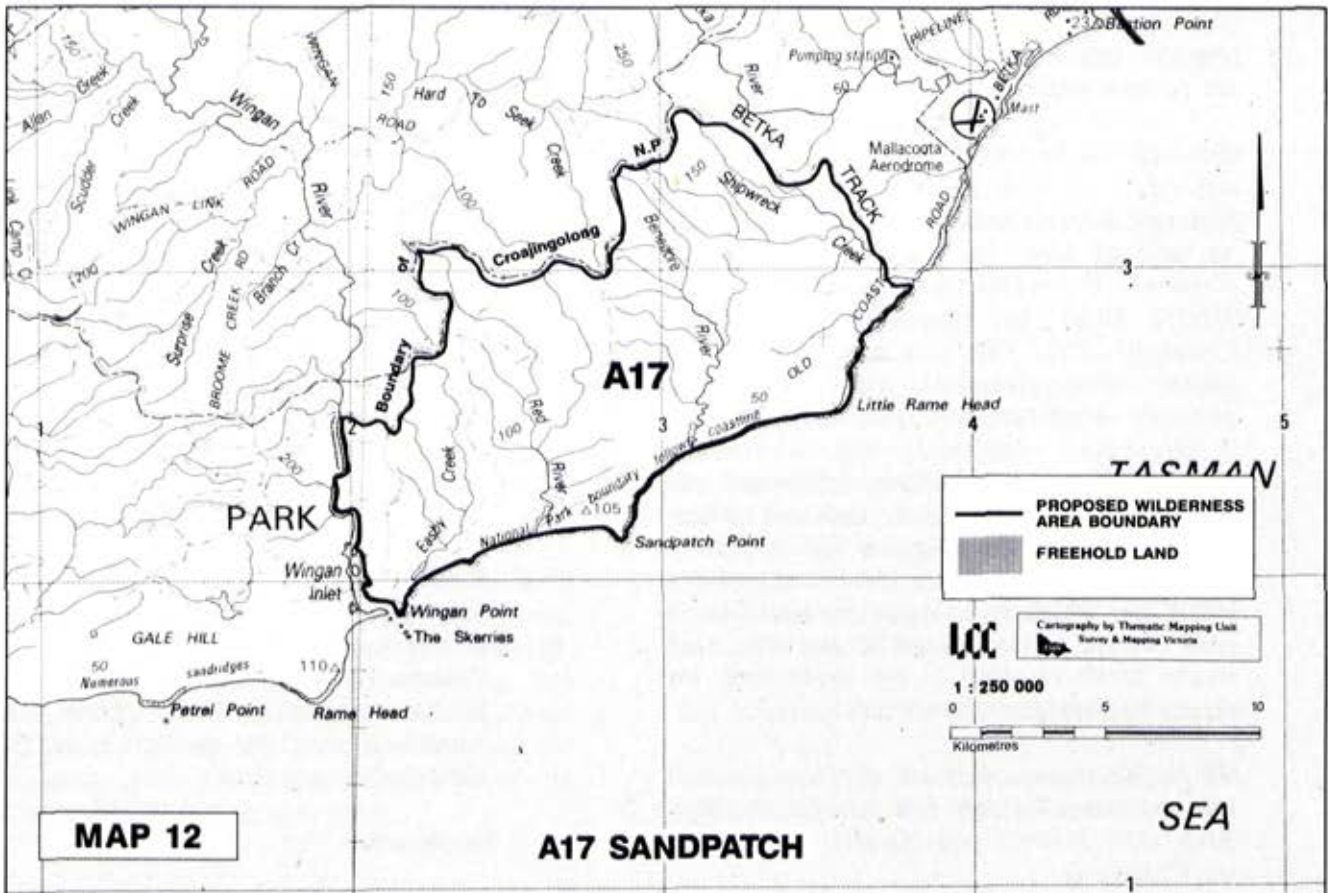
1. Beehive Creek Falls is not included in the proposed wilderness area.
2. Council, in its proposed recommendations for the Rivers and Streams Special Investigation (1990), has identified two small catchments within the proposed wilderness area as Essentially Natural Catchments. Recommendation A16 above is consistent with the protection of the identified river values.

#### A17 Sandpatch

This proposed coastal wilderness area between Wingan Inlet and Shipwreck Creek near Mallacoota forms part of the Croajingolong coast in far East Gippsland. It encompasses virtually the entire catchments of five coastal streams - Easby Creek, Red River, Benedore River, Seal Creek, and Shipwreck Creek - which are some of the least disturbed catchments in the State. The area also includes part of the eastern fall of the lower Wingan River. These watercourses are incised into granitic bedrock which rises to 300 m in the north. The 23 km section of coastline is virtually undisturbed and includes the partially vegetated dunes at Sandpatch Point, Little Rame Head and coastal cliffs up to 80 m high cut into sedimentary rock between Sandpatch Point and Shipwreck Creek. Small estuarine lagoons occur at the mouths of each of the coastal streams.

Lowland sclerophyll forests, with low, open understoreys and silvertop and white stringybark dominated overstoreys, occur through the area, grading into banksia woodlands and extensive heathlands toward the coast. There are patches of warm temperate rainforest, with riparian forests along most of the watercourses.





The entire area is virtually undisturbed, except for the presence of formed vehicular tracks which follow each major internal divide. Two trig stations are located in the proposed area, and there is a small navigation light on the western margin. Where detailed surveys have been undertaken, very few introduced species have been recorded. The area is remote from major roads and settlement and it is entirely surrounded by forested public land. It includes one of only two areas in East Gippsland further than 15 km from settled lands, and is part of one of the very few coastal areas with a substantial hinterland in Victoria that has not been subject to major disturbance or modification.

The nature conservation values of the area are very high, partly due to the area's lack of disturbance. For this reason, the area has particular value for study of intact, natural environments. The range of intact vegetation

communities provides important habitat for a number of rare species of wildlife. The streams contain no introduced fish species, (which is a rarity in Victoria) and support good populations of native fish. The coastline and adjacent inlets have significant and diverse geological, geomorphic and landscape values, including the only major sector of cliffed coastline in East Gippsland. The values are enhanced by the area's remote and essentially natural setting.

Capability for self-reliant forms of recreation is also very high, particularly for remote walking. The walking route along the coastline of the Croajingolong National Park is one of the most popular remote walks in Victoria. Sea kayaking along the coast is enhanced by the natural backdrop of the area.

Council realises that this area is relatively small in size. However, given that it is one



of the few areas on the Victorian coastline which is in an essentially undisturbed condition and that it meets other wilderness criteria, Council considered that it is appropriate to set it aside as a wilderness area. Although small in land area, it is buffered on the southern side by the waters of Bass Strait.

### Resource Implications

The entire area is within the Croajingolong National Park, and Council in its 1977 recommendations for this area made specific reference to its undisturbed condition. The proposed wilderness area will however, reduce some opportunities for four-wheel-drive vehicle access to remote sections of the east Gippsland coastline.

The consultants concluded that there are no specific resource implications arising from the recommendation for the proposed area.

### Boundary Alternatives

An option considered but not adopted by Council was for the northern boundary of the proposed wilderness area to follow the course of Hard to Seek Creek, thereby linking with the Wingan River which forms the area's western edge. This would encompass contiguous areas that are relatively little disturbed. However, within this 4200 ha area, timber resources covering some 630 ha have been previously harvested. The area also includes additional grade C+ sawlog resources, covering an area of 3 500 ha, which contribute 1.1% to the regional sustainable yield of the East Gippsland Forest Management Area.

## Recommendation

### A17 Sandpatch Wilderness Area

That the area of 15 700 ha shown on map 12, be used in accordance with recommendations A1--A17(a) to (k) outlined above

and that

- (l) unless inconsistent with (a) to (k) above, where applicable, Council's previous recommendations for the Croajingolong National Park apply
- (m) Council's previous recommendations for the Benedore River and Seal Creek Reference Areas apply

#### Notes:

1. There is scope for rationalising the track network.
2. The fire regimes of the coastal heathland areas are presently manipulated to enhance their habitat value for the rare ground parrot.
3. Council, in its proposed recommendations for the Rivers and Streams Special Investigation (1990), has identified the catchments of the Red and Benedore Rivers, Shipwreck, Seal and Easby Creeks as Essentially Natural Catchments. Recommendation A17 above is consistent with the protection of the identified river values.
4. The Department of Conservation and Environment is currently revising its draft management plan for the Croajingolong National Park.



## B. OTHER AREAS WITH REMOTE AND NATURAL ATTRIBUTES

Council has recognised the special significance of the large essentially natural areas of the State in its recommendations for wilderness areas. Council notes, however, that these areas are not the only relatively undisturbed parts of the State, nor are they the only areas where people may experience the feeling of remoteness from settlement and undertake the more challenging forms of self-reliant recreation.

Victoria contains other, smaller areas of public land which remain in a relatively natural condition. The number of people using these areas for recreation is increasing and will probably continue to do so. As well pressures for the expansion of resource utilisation in some areas will also increase. These and other pressures are all likely to lead to changes to the natural condition of such areas, thereby increasing the value of those that remain undisturbed.

### Wilderness-related Attributes

This investigation has collected a large body of information about those areas of the State that have important wilderness-related attributes and the influences which affect them. The Descriptive Report documents much of this information, with additional information being provided in submissions, discussions, consultants' reports, and by analysis of Preece and Lesslie's original wilderness quality survey data. The information indicates that many areas which did not meet the criteria established for wilderness areas do, nonetheless, have important wilderness-related attributes.

These attributes include high remoteness from settlement or road access, low density or absence of vehicular tracks or structures, essentially natural condition (being areas not subject to past resource utilisation), and opportunities for self-reliant or remote-style recreation in natural environments.

Council wishes to reinforce the notion that many areas of public land across the State,

other than the wilderness areas recommended, have important wilderness-related attributes; that it is appropriate that these be recognised; and, to the extent consistent with existing permitted uses, that they be protected. These areas are listed in Table 8 and shown on Map A. Detailed maps are available on request from Council. All the areas have been subject to minimum modification and most have at least relatively high wilderness quality values. All are larger than 5000 ha.

Table 8

### OTHER AREAS WITH REMOTE AND NATURAL ATTRIBUTES

Recommendation number	Area
B1	North Sunset
B2	South Sunset
B3	Mt Cowra
B4	Annuello
B5	Big Desert State forest
B6	* Victoria Range
B7	* Serra Range
B8	* Major Mitchell Plateau
B9	* Baw Baw Plateau
B10	The Governors
B11	Macalister
B12	Dandongadale
B13	* North Buffalo
B14	* Bundara/Cobungra
B15	Bogong
B16	* Mt Burrowa
B17	* Timbarra Gorge
B18	Brodribb
B19	Mt Kaye
B20	Rame Head
B21	Cape Howe
B22	Vereker

\* Not included in descriptive blocks.

Those areas marked by asterisk in Table 8 were not included in the study blocks described in Council's Descriptive Report. The Council is seeking further specific information on these areas and on the most appropriate boundaries for them.



Council believes that the identified remote and natural attributes of all of the identified areas be considered in more detail, as part of the normal process of public land management and in the preparation of management plans.

### Uses

The following recommendations for the areas listed do not exclude any existing permitted uses, including vehicle-and horse-based recreation, and resource utilisation activities such as timber harvesting or the grazing of livestock. While some of these activities do or could affect minor portions of the areas, none of the areas are known to be subject to major development proposals. Nor do they offer significant potential for new utilisation activity or other disturbance, given their land tenure (as national park), lack of resources, or rugged terrain.

As Council is recommending that existing permitted uses be allowed to continue, the wilderness-related attributes of the areas may not be fully protected. While Council recognises that this may result in some disturbance in parts of such areas, it considers that in the overall context, the identified values can be maintained. The Council also considered several other areas, but did not include them in these recommendations where disturbance from existing land use activity is likely to be more extensive.

The manner in which a permitted use is undertaken could be modified to assist in the protection of the identified remote and natural attributes. For instance, the management response to maintaining an identified attribute could be to avoid upgrading vehicular access routes from four-wheel-drive to two-wheel-drive, locating new access routes or facilities outside the area, or ensuring special care is taken to minimise disturbance in carrying out an activity.

### 'Winter Wilderness'

Council has viewed wilderness as a condition of land, and thus has not specifically considered areas that may appear relatively undisturbed in winter when many disturbances become visually less obvious due to snow cover. Council recognises that areas are however, important for certain snow-based self-reliant forms of recreation.

Some of the Other Areas with Remote and Natural Attributes (Recommendations B9, B13, B14, and B15) are in this category, as are other areas such as the Howitt Plains.

## Other Areas with Remote and Natural Attributes

### Recommendations

#### B1-B22

That the identified remote and natural attributes of the areas described in Table 9

- (a) be recognised by land and water managers, and maintained to an extent consistent with existing permitted uses when decisions that may affect them are being made; and in the development of management plans

and that

- (b) existing land use categories and permitted uses continue as previously recommended by Council and subsequently adopted by government

#### B1 North Sunset

This area encompasses 54 100 ha of Mallee dunefields in the Sunset Country north of Pheney's Track. It lies entirely within the Murray-Sunset National Park and abuts the northern boundary of the proposed Sunset Wilderness Area.

The attributes to be protected are:

- (i) remoteness from settlement and major road access
- (ii) low density of vehicular tracks and structures
- (iii) essentially natural condition

Note:

Council's previous recommendations for the Murray-Sunset National Park are consistent with the above recommendations. One of this park's specific land-use objectives, as approved by the government following publication of the Council's final recommendations for the Mallee Area Review in August 1989, is to protect areas of high wilderness quality.



**Table 9**  
**SCHEDULE OF ATTRIBUTES TO BE PROTECTED**

Rec. number	Area	Attribute				
		Remote from settlement	Remote from major road access	Low density of vehicular tracks	Low density of structures	Essentially natural condition
B1	North Sunset	*	*	*	*	*
B2	South Sunset		*	*	*	*
B3	Mt Cowra	*	*	*	*	*
B4	Annuello		*	*	*	*
B5	Big Desert State Forest	*	*	*	*	*
B6	Victoria Range			*	*	*
B7	Serra Range			*	*	*
B8	Major Mitchell Plateau			*	*	*
B9	Baw Baw Plateau			*	*	*
B10	The Governors			*	*	*
B11	Macalister	*	*	*	*	*
B12	Dandongadale		*	*	*	*
B13	North Buffalo			*	*	*
B14	Bundara/Cobungra			*	*	*
B15	Bogong	*		*	*	*
B16	Mt Burrowa			*	*	*
B17	Timbarra Gorge		*	*	*	*
B18	Brodrigg			*	*	*
B19	Mt Kaye	*		*	*	*
B20	Rame Head	*		*	*	*
B21	Cape Howe	*	*	*	*	*
B22	Vereker		*	*	*	*

**Notes:**

1. Self-reliant recreation is not dependant on vehicle tracks or structures; remote-style recreation includes vehicle- and horse-based recreation

**B2 South Sunset**

This area encompasses 23 600 ha of Mallee dunefields in the Sunset Country south of the Sunset Track. It lies entirely within the Murray--Sunset National Park and abuts the southern boundary of the proposed Sunset Wilderness Area.

The attributes to be protected are:

- (i) remoteness from major road access
- (ii) virtual absence of vehicular tracks and structures
- (iii) essentially natural condition

**Note:**

Council's previous recommendations for the Murray--Sunset National Park are consistent with the above recommendations. One of this park's specific land-use objectives, as approved by the government following

publication of the Council's final recommendations for the Mallee Area Review in August 1989, is to protect areas of high wilderness quality.

**B3 Mt Cowra**

This area encompasses 29 800 ha of Mallee dunefields in the Sunset Country to the north of Honeymoon Track. It is centred around Mt Cowra and is entirely within the Murray--Sunset National Park.

The attributes to be protected are:

- (i) remoteness from settlement and major road access
- (ii) virtual absence of vehicular tracks and structures
- (iii) essentially natural condition
- (iv) opportunities for self-reliant recreation



## Notes:

1. Council's previous recommendations for the Murray--Sunset National Park are consistent with the above recommendations. One of this park's specific land-use objectives, as approved by the government following publication of the Council's final recommendations for the Mallee Area Review in August 1989, is to protect areas of high wilderness quality.
2. This area corresponds to one of the candidate areas (Sunset East) that Council investigated in detail as a possible wilderness area. (The identification process is outlined in the Introduction). While encompassing 29 800 ha of undisturbed land, it was not proposed as a wilderness area given its regional context in which several larger areas of undisturbed land in the Mallee have been proposed.

**B4 Annuello**

This little-disturbed area of about 19 500 ha is that part of the Annuello Flora and Fauna Reserve between Angle Track and the Kerang--Red Cliffs transmission line. It lies to the north-west of Ouyen and consists of low calcareous dunes typical of the Mallee.

The attributes to be protected are:

- (i) remoteness from major road access
- (ii) low density of vehicular tracks
- (iii) absence of structures
- (iv) essentially natural condition

## Notes:

1. The recommendations above are consistent with the protection of the identified flora and fauna values of the reserve.
2. In the longer term there is potential to rationalise the track network, bearing in mind the need for adequate access for fire protection and suppression.
3. This area corresponds to one of the candidate areas (Annuello) that Council investigated in detail as a possible wilderness area. (The identification process is outlined in the Introduction). It was not proposed as a wilderness area because of its relatively small size, its close proximity to surrounding freehold land, and the presence of vehicular tracks.

**B5 Big Desert State forest**

This area encompasses 31 700 ha of Mallee dunefields in the Big Desert, east of the Murrayville Track, and to the south and east of Chinaman Well Track. It forms part of the area of State forest in the Big Desert and abuts the southern boundary of the proposed South Wyperfeld Wilderness Area.

The attributes to be protected are:

- (i) remoteness from settlement and major road access
- (ii) virtual absence of vehicular tracks
- (iii) absence of structures
- (iv) essentially natural condition

## Note:

Council's previous recommendations for State forest in its final recommendations for the Mallee Area Review in August 1989, as approved by government, stated that areas of relatively high wilderness quality outside the Big Desert Wilderness and national parks be protected.

**B6 Victoria Range****B7 Serra Range****B8 Major Mitchell Plateau**

The remote and natural values of the Grampians, as recorded by the Preece and Lesslie survey, are relatively low given the area's long history of utilisation, its road and vehicular track networks, and its proximity to surrounding settled land. The Grampians is, however, the only large consolidated natural area remaining in south-west Victoria, and the only part recording at least moderate wilderness quality.

The environs of the Major Mitchell Plateau, the Serra Range and its western fall (to the north of Teddy Bear Gap), and the Victoria Range are the three largest (respectively 13 300 ha, 9000 ha and 7000 ha), least disturbed areas of the Grampians. They each provide for remote and challenging forms of self-reliant recreation.

The attributes to be protected are:

- (i) low density of vehicular tracks and structures
- (ii) mostly natural condition
- (iii) opportunities for self-reliant recreation



## Notes:

1. The approved plan of management for the Grampians National Park includes much of these three areas in 'Zone 1'. This zoning provides the highest level of protection to those large regions of the Park that have remained relatively unchanged.
2. There is potential to rationalise track networks and rehabilitate disturbed areas.

**B9 Baw Baw Plateau**

This area of about 6200 ha encompasses most of the Baw Baw Plateau, extending from Mt Whitelaw southward to the Mt Erica car park and access road. It excludes the Mt Baw Baw Alpine Resort and the Mt St Gwinear car park and associated tracks. The boundary follows the plateau edges, which is coincident with the Baw Baw National Park boundary. While of moderate wilderness quality it is one of the few large untracked sub-alpine areas of the State.

The attributes to be protected are:

- (i) absence of vehicular tracks
- (ii) virtual absence of structures
- (iii) mostly natural condition
- (iv) opportunities for self-reliant recreation, including snow-based activities

**B10 The Governors**

This 7000 ha area of the Alpine National Park is bounded to the east and south by the north branch of the Jamieson River, to the west by Mitchells Creek and the boundary of the Howqua Hills Historic Area, with the northern edge following a ridge to the south of Brocks Road. The area straddles the divide of the Jamieson and Howqua Rivers to the south of Mt Buller.

The attributes to be protected are:

- (i) absence of vehicular tracks and structures
- (ii) mostly natural condition
- (iii) opportunities for self-reliant recreation

**B11 Macalister**

This 35 500 ha area encompasses much of the headwaters of the Macalister River, to the south of the Great Dividing Range within the Alpine National Park. It extends from the Macalister confluence with the Caledonia River northwards to Mt Clear. It is bordered

to the east by the Snowy Plains escarpment, and in the west by Bull and Blue Spur Tracks.

The attributes to be protected are:

- (i) remoteness from settlement and major roads
- (ii) low density of vehicular tracks
- (iii) absence of structures
- (iv) opportunities for self-reliant and remote-style recreation

## Note:

This area is co-incident with one of the candidate areas (Macalister Headwaters) that Council investigated in detail as a possible wilderness area. (The identification process is outlined in the Introduction). It was considered by Council, that given the disturbance by timber harvesting in its headwaters, the extent of current grazing (involving two licensees) and the present use of routes through the area for recreational horse-riding and four-wheel-driving, that it was not appropriate to recommend the area to be a wilderness area.

**B12 Dandongadale**

This area of 9000 ha of State forest abuts the northern edge of the proposed Razor/Viking Wilderness Area (along the Cobbler Lake-Abbeyard Track). It encompasses the catchments of a number of tributaries of the Buffalo and Dandongadale Rivers, including the whole of the Little Dandongadale River catchment.

The attributes to be protected are:

- (i) remoteness from major road access
- (ii) low density of vehicular tracks
- (iii) absence of structures
- (iv) mostly natural condition

## Note:

The area is prospective for minerals such as gold; a small area is subject to licensed grazing; and the forests of the area include sawlog resources which contribute less than 0.4% to the regional sustainable yield of the Wangaratta Forest Management Area.

**B13 North Buffalo**

The North Buffalo Plateau together with the dissected surrounding foothills form a



relatively large undisturbed area of 6800 ha. The area is centred on Mt McLeod and is bounded by Buffalo Creek to the east and by the plateau escarpment bordering the Buffalo River valley to the west. It is entirely within the Mt Buffalo National Park.

The attributes to be protected are:

- (i) low density of vehicular tracks and structures
- (ii) essentially natural condition
- (iii) opportunities for self-reliant recreation

#### **B14 Bundara/Cobungra**

Lying on the edge of the Bogong High Plains within the Alpine National Park, this 11 100 ha area is bounded by the Bogong High Plains Road and the Alpine Walking Track to the north. The Cobungra River forms its western and southern edge with the park boundary forming its eastern edge.

The attributes to be protected are:

- (i) low density of vehicular tracks and structures
- (ii) opportunities for self-reliant recreation, including snow based activities

Note:

The Department of Conservation and Environment's proposed management plan for the Alpine National Park includes most of this area within a remote-walking area. Management aims are to retain the remote character of such areas.

#### **B15 Bogong**

While much of the Bogong High Plains has been extensively modified by works associated with the Kiewa Power Scheme and has been subject to regular intensive grazing, the area centred on the Mt Bogong massif itself is relatively remote and natural.

The area encompasses about 11 700 ha surrounding Mt Bogong, Victoria's highest mountain. It extends southward to walking track No. 107 which links the Big River to Kellys Hut, and includes the eastern fall of Mt Nelse. The area is entirely within the Alpine National Park, the boundary of which forms the eastern edge of the area. The western boundary follows the Little Bogong and Big River Fire Tracks; the northern

boundary is to the south of Mountain Creek Track.

The attributes to be protected are:

- (i) remoteness from settlement
- (ii) virtual absence of vehicular tracks
- (iii) low density of structures
- (iv) opportunities for self-reliant recreation, including snow-based activities

Note:

The Department of Conservation and Environment's proposed management plan for the Alpine National Park includes most of this area within a remote-walking area. Management aims are to retain the remote character of such areas.

#### **B16 Mt Burrowa**

This area of about 7000 ha in the far north-east of the State encompasses that part of the Burrowa--Pine Mountain National Park lying between the Cudgewa--North Walwa Road in the north and Black Mountain in the south, with its eastern and western edges following the edge of the massif. It is dominated by the mainly granitic Mt Burrowa, which rises to 1300 m.

The attributes to be protected are:

- (i) absence of vehicular tracks and structures
- (ii) essentially natural condition
- (iii) opportunities for self-reliant recreation

#### **B17 Timbarra Gorge**

This area of about 5100 ha lies mid-way between Swifts Creek and Gelantipy. It is bounded by escarpments surrounding the Timbarra River which follow Camp Oven Gap Track to the west and Running Creek, Hill Plain and Ah Chow Tracks to the east. It encompasses a steeply dissected section of the Timbarra River.

The attributes to be protected are:

- (i) remoteness from major roads
- (ii) absence of tracks and structures
- (iii) essentially natural condition

Note:

The entire area is within State forest. Council has previously recommended, and



the government has approved, that a natural features zone be designated over the river corridor. The major aims of management are to protect natural and scenic values and provide recreational facilities where not in conflict with these values. Timber harvesting is not permitted in this zone. The deep gorges on the Timbarra River are a specific feature required to be protected.

### **B18 Brodribb**

This little-disturbed area of 8200 ha lies on the edge of the Errinundra Plateau and is entirely within the Errinundra National Park. The area is bounded by the Bonang Highway in the west, Errinundra Road and divides in the north and east, and Greens Road and Ellery Creek Track in the south. It encompasses the headwaters of the Brodribb River, which falls from the steep escarpments of the plateau margin.

The attributes to be protected are:

- (i) absence of vehicular tracks and structures
- (ii) essentially natural condition

Note:

This area is part of one of the candidate areas (Brodribb River) that Council investigated in detail as a possible wilderness area. (The identification process is outlined in the Introduction). Council did not recommend that this area be a wilderness area principally because of its small size (13 300 ha). Those parts of the candidate area outside the existing national park contain sawlog resources that contribute 1.1% of the sustainable yield of the East Gippsland Forest Management Area. Parts of this State forest area may not be harvested due to limited resource and the existence of sites of significance. Council has sought detailed mapping of the commercial stands, and will give further consideration to possible additions to this area as it prepares its final recommendations.

### **B19 Mt Kaye**

This 8500 ha area is centred on Mt Kaye. It extends from the WB Line in the north (which abuts the southern boundary of the proposed Genoa Wilderness Area), to Wombat Hill in the south. It is bounded to the east by the catchment divide of the West Thurra River and Mt Kaye Track, and to the

west by minor divides set back from the Cann Valley highway.

The attributes to be protected are:

- (i) remoteness from settlement
- (ii) low density of vehicular tracks
- (iii) absence of structures
- (iv) essentially natural condition
- (v) opportunities for self-reliant recreation

Note:

Most of this area is within the Coopracambra-Kaye National park, with the south-east corner within an area that the government has proposed to add to this national park.

### **B20 Rame Head**

This relatively unmodified area of about 8000 ha is within the Croajingolong National Park. It lies on the East Gippsland coast between Point Hicks and Wingan Inlet. The inland boundary follows the edge of past logging areas northwards to Humphrey Track.

The attributes to be protected are:

- (i) remoteness from settlement
- (ii) absence of structures
- (iii) essentially natural condition
- (iv) opportunities for self-reliant recreation

Notes:

There is potential to rationalise the track network consistent with fire protection requirements.

### **B21 Cape Howe**

This area of 6900 ha encompasses the granitic Howe Range and the surrounding barrier complexes, dune systems, wetlands and coastline at the easternmost extremity of Victoria. It is bounded by the catchment divides of Barracoota Lake and Lake Wau Wauka, and by the New South Wales border. The area is entirely within the Croajingolong National Park.

The attributes to be protected are:

- (i) remoteness from settlement and major roads
- (ii) low density of vehicular tracks
- (iii) virtual absence of structures
- (iv) essentially natural condition
- (v) opportunities for self-reliant recreation



**Note:**

This area is one of the candidate areas (Cape Howe) that Council investigated in detail as a possible wilderness area. The New South Wales government is presently undertaking an investigation into a proposal to designate much of the (17 100 ha) Nadgee Nature Reserve as a wilderness area. Council supports the designation of the contiguous undisturbed lands of Cape Howe and the Nadgee Reserve as a wilderness area, possibly encompassing an area of 18 000 ha or more. It does not, however, consider that the Victorian portion is of sufficient size to be declared a wilderness area in its own right. The Council will be having further discussions with the New South Wales authorities prior to the final recommendations, with a view to reaching agreement on a wilderness designation over the whole area.

**B22 Vereker**

The Vereker area encompasses 22 500 ha in the north-eastern portion of the Wilsons Promontory National Park, east of the Darby Creek plain and to the north of Mt Latrobe. It encompasses a major part of the largest undisturbed sector of the Victorian coast.

The attributes to be protected are:

- (i) remoteness from settlement and major roads
- (ii) low density vehicular tracks and structures
- (iii) essentially natural condition
- (iv) opportunities for self-reliant recreation

**Notes:**

1. The approved management plan for the Wilsons Promontory National Park includes much of this area in 'Zone I'. This provides the highest level of protection.
2. This area is one of the candidate areas (Wilsons Promontory) that Council investigated in detail as a possible wilderness area. Council has not recommended that it be a wilderness area due to the disturbance associated with the Five Mile Road which traverses the area, the reduced opportunity to obtain a sense of remoteness given its proximity to surrounding boating activity, and the desire to maintain opportunities for cycle-riding along the Five Mile Road.

## Offshore Islands

All of Victoria's offshore islands were briefly reviewed in the Descriptive Report. While a number appeared heavily disturbed or were near settlements, several were considered to have high remoteness and naturalness values. Those islands of apparent highest value were further evaluated.

Additional descriptive material was sought from primary sources and available literature on the general biophysical condition of the islands and the presence of any extant structures. Distances from the nearest settlement, shipping lanes, constructed boat ramps and navigation lights were recorded. Total wilderness quality values were measured for each island using similar criteria to those used by Preece and Lesslie in 1987 for terrestrial environments.

An unpublished report containing a detailed description of the evaluated islands and an outline of the approach used in calculating their wilderness quality has been prepared by Council. Copies are available on request. This report also assessed the islands of the Nooramunga Marine and Coastal Park, many of which (notably Box Bank) are relatively undisturbed.

Detailed analysis shows that a number of Victoria's offshore islands have very high remoteness and naturalness values, with many scoring in the highest class of the individual wilderness attributes. Indeed, several of the islands, in addition to being essentially unmodified, had virtually no detracting activities occurring within a 9 km radius (the area within this radius being approximately equivalent to 25 000 ha).

The ongoing remoteness and naturalness of the islands partly relies on the presence of a large surrounding marine zone being free (or freed) of detracting activities. While detailed information is available for many of these activities, information on the relationship between commercial fishing and other boating use and the conservation value of marine areas is not readily available and has not been evaluated. In addition, the dependence of island fauna on surrounding waters is not known. Council is, therefore, not proposing to recommend that any island, or any island together with a surrounding marine zone, be specifically protected as a wilderness area.



However, as noted above, a number of the islands have a high wilderness quality and are very little disturbed. These islands are listed in Table 10. Council considers that the wilderness-related attributes of these islands are of special value and that they should be recognized and protected by appropriate management. Further consideration could be given to the protection of these islands and their surrounding waters as wilderness areas if and when further information is available.

**Table 10**

**OFFSHORE ISLANDS WITH REMOTE  
AND NATURAL ATTRIBUTES**

B23 Wilsons Promontory Islands	B24 Seal Islands
Shellback Island	Rag Island
Norman Island	Notch Island
Glennie Group	Seal Island
Great Glennie	White Rock
Dannevig	
McHugh	
Anser Group	
Anser	
Kanowna	
Cleft	
Wattle Island	
Rabbit Island	
Rabbit Rock	

**Recommendations**

**B23--B24 Offshore Islands**

That

- (a) the remoteness and naturalness attributes of the islands listed in Table 10 (above) be recognised by the managers of land and marine waters and protected when decisions that may affect them are being made; and in the development of management plans

that

- (b) the following values and attributes be protected
  - (i) breeding sites of seabirds including those of the little penguin and short-tailed shearwater

- (ii) colonies of Australian fur seal
- (iii) virtual absence of structures or other forms of modification

and that

- (c) the Victorian government seek the co-operation of the Commonwealth Government to ensure the sympathetic management of Citadel and Clifty Islands.

Note:

Citadel Island (part of the Glennie Group off Wilsons Promontory) and Clifty Island (part of the Seal Island group) are Commonwealth freehold. Automatic navigation lights are maintained on each island. Some associated structures (now mainly derelict) dating back to the 1880s are of historical interest.

**B23 Wilsons Promontory Islands**

The eleven identified islands are between 2 and 7 km offshore from Wilsons Promontory and range in size from 1.3 ha to 138 ha. All are part of the Wilsons Promontory National Park and all are surrounded by at least 300 m of protected the Wilsons Promontory marine waters (being either the Wilsons Promontory Marine Park or Marine Reserve). Anser Island is also a reference area (which has not yet been proclaimed).

Note:

A Management plan for the Wilsons Promontory National Park defining specific controls on management and use of the park's islands was approved in June 1987. Management emphasis is on the protection of the natural environment due to their fragility and ecological significance. The islands are mostly inaccessible and public access is generally not permitted.

**B24 Seal Islands**

The four identified islands are about 15 km off the east coast of Wilsons Promontory. Together they cover an area of approximately 35 ha and are all within a wildlife reserve.

**Caves**

Council's Descriptive Report made reference to caves as being a specialised environment that has the potential to meet the



requirements of being remote from, and substantially undisturbed by, the influence of European settlement. The greater majority of the State's 950 documented caves have not been subject to intensive use or the provision of facilities. A report to the then Cave Classification Committee of the Department of Conservation and Environment by Davey and White provides further information on these caves.

Council considers that many caves have wilderness-related attributes of lack of disturbance and opportunities for self-reliant recreation, and that these should be recognised and protected by the land manager.

### **Recommendation**

#### **B25 Caves**

That the naturalness and self-reliant recreation attributes of caves on public land be recognised by cave managers and protected when decisions that may affect them are being made; and in the development of management plans.

#### **Note:**

The Department of Conservation and Environment is preparing a strategy for the management of caves and karst in Victoria.

### **Trackless Areas**

One of the major factors reducing wilderness quality of public land in Victoria is the relatively dense network of vehicular tracks. Trackless areas of any appreciable size are relatively scarce across the State and potentially vulnerable to encroachment upon by further track development.

Most of the large trackless areas are included in proposed wilderness areas or in the list of Other Areas with Remote and Natural Attributes. There are, however, other sizeable areas that may be relatively undisturbed, have high value for nature conservation, provide opportunities for particular forms of recreation and be important in a regional context. Examples include parts of the Little Desert, parts of Kooyoorra and Langi Ghiran State Parks, Mt Feathertop and The Razorback, and Little River Gorge.

### **Recommendation**

#### **B26 Trackless Areas**

That managers, wherever possible, protect other trackless areas of appreciable size.

### **Excluded Candidate Areas**

Four of the 22 candidate areas investigated in detail as possible wilderness areas (the identification process is outlined in the Introduction), have not been included in the proposed wilderness areas described in Chapter A, or the other areas with remote and natural attributes described in this chapter. Council's approach to these areas is described below.

#### **The Little Desert - Western Block**

This area was not recommended by Council to be a wilderness area because of its small size (14 000 ha), its close proximity to surrounding freehold land, and the density of tracks relative to its size. Council believes that some part of the Little Desert National Park should be specifically identified for the protection of its wilderness-related values. While the western block appears to have the most potential, the central block of the national park is also relatively undisturbed. Both have potential for a wide range of recreational activities. The Department of Conservation and Environment has commenced the preparation of a management plan for this park which will include detailed consideration of such issues.

#### **Yarrarabulla Creek**

This candidate area of about 19 000 ha of State forest lies north of the Great Dividing Range, between the Barry Mountains and the Mount Buffalo National Park. It was considered by Council that because of its small size and relatively elongated shape, and its existing uses, it was not appropriate to recommend it as a wilderness area.

The area is prospective for gold production; parts are used for licensed grazing; and it includes sawlog resources, representing up to 0.4% of the sustainable yield of the Wangaratta Forest Management Area. As the recommendations for other areas with remote and natural attributes (B1-B22 above) do not



preclude existing permitted uses, it may not be possible to protect the area's present relative lack of disturbance especially if new areas were subject to timber harvesting. However, it may be possible to avoid the area of available resource by modifying the boundary of the candidate area. Council has, therefore, sought detailed mapping of commercial timber stands and will give further consideration to this area as it prepares its final recommendations.

### Wongungarra

This candidate area encompasses about 17 500 ha of mainly undisturbed State forest with few tracks or structures. Council considers that given its small size, its relatively elongated shape and partial catchment, the disturbance by grazing and other uses, it was not appropriate to recommend it as a wilderness area.

The area also includes sawlog resources representing approximately 0.1% of the sustainable yield of the Central Gippsland forest management area, and approximately 4.4% of the sustainable yield of the Wangaratta Forest Management Area. The utilisation of this resource would result in extensive disturbance to a major part of the headwaters of the Wongungarra River. Given that one of the primary attributes of this area is the lack of disturbance to natural systems, it would not be possible to protect these if the available timber resources were utilised. As the proposed recommendations for Other Areas with Special Attributes (B1--B22 above) do not preclude existing permitted uses, Council has not included the area in this category.

### Wabba

This candidate area encompasses 18 500 ha of State forest. Council considered that because of its small size and its relatively close proximity to cleared freehold land on its eastern margin, it was not appropriate to recommend it as a wilderness area.

The area is prospective for base metal mineralisation and current exploration tenements are held over part of the area. It also contains sawlog resources corresponding to approximately 0.4% of the regional sustainable yield of the Wodonga Forest Management Area. As the recommendations for Other Areas with Remote and Natural Attributes (B1--B22 above) do not preclude existing permitted uses, it may not be possible to protect the area's present relative lack of disturbance, especially if new areas were subject to timber harvesting. However, it may be possible to avoid the area of available resource by modifying the boundary of the candidate area. Council has therefore, sought detailed mapping of commercial timber stands and will give further consideration to this area as it prepares its final recommendations.

### Note:

Council, in its 1973 study covering this area, noted that it is of considerable potential value for uses such as scientific reference or recreation in solitude, and that the undisturbed parts be maintained in a state that would allow such uses in the future, Council in its 1986 review of the area, specifically recommended that the significant scenic and nature conservation values of the stream environs of Log Bridge Creek be protected.



## C. MANAGEMENT PRINCIPLES FOR DESIGNATED WILDERNESS AREAS

In addition to making recommendations on the use of specific areas, Council has developed broad guidelines for the management of designated wilderness areas, as required under the terms of reference for this investigation.

Accordingly, Council recommends that the following principles and broad guidelines be taken into account when planning for and managing these areas. They seek to provide clear directions, for the preparation of specific management plans, so that the areas will be managed as close as possible to the ideal situation.

In an ideal situation, an area designated as wilderness should exhibit no signs of having been influenced by the effects of European settlement and should be large enough to enable the natural environment to respond to changes resulting from natural processes. However, as most of the proposed wilderness areas include at least some evidence of the influences of European settlement (such as weeds or vehicle tracks), and because of their relative proximity to settled land and their increasing exposure to human pressures, active management of the proposed wilderness areas is required.

Council considers that the underlying approach to the management of wilderness should be to work towards maximising the extent to which wilderness areas are undisturbed by the influences of European settlement, but recognise that responsible management of these areas in Victoria may require certain compromises in relation to the ideal.

This is the approach underlying the wilderness provisions of the *National Parks Act 1975*. These state that a wilderness area, ideally, will not contain, in the terms used by the legislation:

- roads, structures or installations
- commercial activity (other than recreation) or development
- use of any form of motorised or

mechanical transport

- use of any non-indigenous animal
- hunting

In recognition of the practical realities of managing any area of public land in Victoria, the legislation also provides for certain activities or developments which would not otherwise be permitted in the ideal wilderness area, provided they are considered essential or necessary for the responsible management of the area. For example, any measure considered essential for the prevention and control of fire is permitted.

Likewise, Council has established principles covering the following key management issues. They are applicable for all wilderness areas across the State.

1. Existing vehicular tracks and structures
2. Previous utilisation activity
3. Introduced plants and animals
4. Fire management
5. Management of special nature conservation values
6. Scientific investigation and study
7. Recreational use
8. Other forms of direct use
9. Cultural associations
10. Air and water quality
11. Monitoring indicators

A discussion of each of these management issues is provided below together with an indication of relevant research activities. A bibliography relevant to the issues is included at the end of this chapter.

The associated recommendations reflect the general land-use objectives recommended for the wilderness areas described in Chapter A. The underlying principle is that management should ensure that all activities are consistent with protecting the wilderness condition of the area and, where possible, enhancing wilderness quality.



## 1. Existing Vehicular Tracks and Structures

The increasingly sophisticated technology of our modern society has resulted in major and rapid changes to natural systems, through the clearing of extensive areas of land, alterations to hydrological systems, and large-scale earthworks. Historically, such changes were focussed on the more agriculturally productive areas, although mining tracks were established through previously untrafficked areas of public land, huts and yards were constructed in association with grazing, and surveyors built trig stations and other survey markers.

More recently, as a result of the inquiry into the 1939 bushfires and the demand for timber products during the housing boom following World War II, extensive vehicular track networks were established through previously remote areas for fire-control purposes and timber extraction. Many of these tracks are still used for fire protection or survey, but now also provide for recreational use.

Some of the original tracks have become overgrown following their disuse, and some timber structures have been lost through bushfires or the effects of weathering. Nevertheless, there are few large natural areas of the State without some tracks and structures that remain as evidence of past use.

### Existing Vehicular Tracks

Some of the proposed wilderness areas include vehicular tracks within their boundaries. The great majority were constructed for fire prevention or suppression purposes, although some were formed to facilitate resource utilisation or by recreational vehicle use of old bridle paths. Many have subsequently been maintained and used for recreation, although most are only suitable for four-wheel-drive access.

In addition to the direct physical effects of the construction of vehicular tracks, their on-going maintenance and use has an ecological impact which affects wilderness values.

### Physical impacts of the tracks

Tracks and their use are one of the most important manifestations in natural areas of the impact of European settlement.

A number of studies have shown that open areas, such as those associated with tracks, increase the efficiency of predators. Tracks are, therefore, likely to enhance opportunities for predation. They appear to be favoured by introduced predator species such as dogs and foxes as pathways for movement and hunting and may also facilitate their dispersal into otherwise remote country. In addition, at least one study has recorded native predators only along forest tracks, despite a more intensive survey effort away from the tracks.

Even long-unused and partly overgrown vehicular tracks are considered to restrict the movements of many species of small mammals, and may also have an adverse impact on sedentary understorey birds, lizards and terrestrial invertebrates. The width of the gap between suitable habitat on either side of the track, the relative mobility and behaviour of a particular animal, and the degree of difference between the road habitat and adjoining habitat appear to be the major influences on the degree to which tracks isolate animal populations.

The particular habitat provided by tracks may permit artificial increases in populations of certain species. Some bats, for instance, take advantage of new flight paths and foraging space; and run-off from a road surface may enhance the habitat of amphibians. Increased water run-off can also lead to changes to plant communities along the edge of a road. In some places, tracks can alter the understorey vegetation by permitting more light to penetrate into areas otherwise shaded by a forest canopy.

As well as changing vegetation and disrupting habitat, vehicular tracks can alter natural drainage patterns. Depending on the environment, the standard of track formation and the standard of maintenance, they can result in localised soil erosion and earth movement, and this can be exacerbated by high levels of use. They are identified as far more effective producers of run-off than natural catchments.

Erosion is particularly associated with gravel roads, earthen tracks constructed on steep grades, and tracks where little provision has been made for run-off. Research by the Melbourne and Metropolitan Board of Works indicates that vehicular tracks may cause long-term deleterious effects on stream



quality. Increased sediment washed into streams can also have an adverse impact on invertebrates and the success of fish-breeding and may also lead to the death of adult fish.

Crossings of small streams can act as filters or barriers to the movement of aquatic species, many of which are sensitive to changes such as the increase in the velocity of water as it passes through culverts or over fords.

As well as their ecological impacts, vehicular tracks can have an aesthetic impact, especially where they are poorly sited, such as on ridge lines or down steep slopes (where they often require cross-drainage works), or where their construction has involved major cut and fill.

Generally, the level of impact increases with size of track. Even foot tracks, while permitted in wilderness areas, can contribute to some impact.

### Physical impacts from the use of tracks

The level of a track's use may determine the condition of its surface, the amount of sediment run-off, and the need for maintenance.

Wheel ruts become a focus for run off and erosion of the pavement. One study indicated that an unsurfaced road under high usage yielded about 30 tonnes of sediment per ha per year. This contrasts with about 300 kg per ha per year from natural erosion. Elsewhere, unmade roads with inadequate drainage or unstable batters have been found to produce between 140 and 250 tonnes of sediment per ha of road per year. Although there is little documented evidence, field experience indicates that intensively used forest tracks need regular maintenance including, in some instances, regrading every two or three years. Such maintenance involves soil disturbance, and this can facilitate the establishment of weeds.

Most of the vehicular tracks included in the proposed wilderness areas presently receive only moderate use, although some occasionally require substantial maintenance. Many of the adjacent roads, however, receive a greater level of use and have greater impacts, particularly noise, sedimentation, and disruption to wildlife.

Use of tracks can also lead to the accidental

translocation of plants. Seeds, spores and vegetative parts of plants are regularly transported by attachment to vehicles. In one study, 259 different species of plants were germinated from seeds obtained from the sludge of a commercial car wash - a number of them were only found growing naturally some 100 km distant.

Vehicular transportation of fungal spores has also been documented and is cited as a major vector for the spread of *Phytophthora cinnamomi* - one of the agents responsible for forest dieback. Special precautions such as washing of machinery, are observed to avoid such dispersal.

Road kills of animals occur mainly on major roads and highways where traffic moves fast; they have little relevance in the context of wilderness areas. However, vehicular use of tracks can lead to less obvious impacts on fauna. Overseas studies indicate that traffic noise and movement can disturb wildlife by disrupting nesting patterns and habitat utilisation. On heavily used roads, this effect can be discerned more than one kilometre away. Noise nuisance can also reduce amenity for other recreational users, but this is dependent on the level of use, the speed and type of vehicle, and the nature of the terrain.

Vehicular access can also lead to the dumping of car bodies, parts and tyres, and glass, cans, paper, and plastic litter as well as damage to vegetation and vandalism. However, such problems are not major in the proposed wilderness areas as virtually all of the minor roads and tracks in and adjacent to such areas receive generally low levels of vehicular use.

### Principles

In an ideal situation, no vehicular tracks should be located within a wilderness area. However, Council considers that those essential for fire protection purposes, including suppression, fuel reduction, or maintenance of helipads, should be permitted to remain. These are defined in regional fire plans and other relevant management plans.

Given the above-mentioned points, a major objective in the management of the wilderness areas is to minimise the number of vehicular tracks, and to reduce the length, width and influence of those retained.



The Council considers that the following principles should apply in the review, rationalisation, and management of the existing track networks within wilderness areas. They are based on the underlying principle as stated in Recommendation A1--A17(g) in Chapter A, that tracks should only be used for essential management purposes, and that public use would not be permitted.

#### Purpose

- \* Only those tracks which are demonstrably essential for fire-protection purposes should be retained.
- \* The retained tracks should also be suitable for other essential management purposes, such as the control of introduced species; or form part of strategic fire breaks or control lines for fuel-reduction burns.

#### Use

- \* Other than the use of tracks in the short-term for rehabilitation works, the only essential management uses should be fire protection, search and rescue, and vermin and noxious weed control.
- \* Vehicular use of retained tracks should be minimised and, where possible, any essential management tasks be undertaken concurrently.

#### Condition

- \* As far as possible, the retained tracks should only traverse suitable terrain, be sited to minimise the need for maintenance and to minimise the potential for erosion due to run-off.
- \* It is recognised that, in some limited circumstances, minor re-alignment of short sections of such tracks may be required to avoid damage to sensitive environments, and this may involve the use of machinery.

#### Maintenance

- \* The need, design and timing of maintenance of existing tracks should be subject to regular review and take account of:

- research results indicating alternative fire-control technologies
- new information about the ecological impacts of tracks
- areas containing significant plant or animal species or habitats
- the visual and noise impact of management vehicles on recreational visitors (to avoid periods of peak usage of the wilderness).

- \* The level of track maintenance should reflect the local environment and the priority for fire protection needs. Approaches could include the following:

- allow revegetation, but mark the track alignment on a map or on the ground to permit re-opening if required
- allow revegetation of undergrowth but periodically remove fallen trees or other major impediments to vehicular access
- periodically clear both fallen trees and undergrowth
- use of machinery where essential for maintenance as a strategic fire-access route

but, in all instances, any essential alteration to the track formation or batter surface should be minimised.

The following recommendation is made in accordance with Recommendations A1--A17(k) in Chapter A which states that,

'wherever possible, existing vehicular tracks or roads, structures or other facilities be removed, and areas of these and other disturbances be rehabilitated as soon as practicable'.

#### Recommendation

##### **C1 Existing Vehicular Tracks**

That

- (a) the managing authority continue to review the existing track networks with a view to their minimisation

and that



- (b) this review and the subsequent management of vehicular tracks take into account the principles outlined above.

### Existing Structures

The Descriptive Report briefly describes the impact of a number of structures on wilderness quality. These structures include railway lines, dwellings, huts, trigonometric stations, gas and oil pipelines, communication and fire towers, electricity transmission lines, telephone lines, weirs and other impoundments, water pipelines and aqueducts, and engineering works at river gauging stations. Their impact arises largely from both the direct and indirect effects of physical modification on natural processes, as well as an aesthetic impact and the provision of evidence of European settlement.

Ideally, there should be no structures in wilderness areas. Some of the proposed areas, however, include trigonometric stations, huts, and navigation aids as well as minor signs, minor stockyards, fencing and other relics. The general recommendations above would preclude the development of new structures in the proposed wilderness areas but Council believes that there are certain circumstances in which existing structures may remain.

### Trigonometric stations

The network of trigonometrical survey stations (trig stations) across the State is an essential part of the geodetic survey of Victoria. These trig stations are precisely fixed in position and elevation, and constitute the fundamental control system for all mapping, geographic data bases, surveys, land information systems, and major engineering projects.

The network has been intensified to provide control for the State's 1:25 000-scale and 1:50 000-scale mapping programs. Although there are few trig stations in the proposed wilderness areas, some of them are 'first-order' points; that is, their positions are known to the highest degree of accuracy and their preservation is of national significance.

Most trig stations are on mountain tops or other prominent features and usually consist of a ground mark surmounted by a survey marker post. The survey markers are erected

over the ground marks to provide a permanent reference object observable from other, distant points. These act as a landmark for a wide range of map users, by virtue of their positions being plotted on topographic maps. They also indicate the presence of, and provide protection for, the ground mark. Maintenance of cleared sight-lines and a means of access is important for their operation, although vehicular access is not always necessary or possible.

Under the *National Parks (Amendment) Act* 1989, only permanent survey markers that existed on 23 August 1989 may remain in a wilderness park or zone declared under that Act. The Act also states that there should be no other structures or installations, except in certain circumstances considered essential by the Director of National parks and Public Lands. The Department of Finance, which has responsibility for these stations, has indicated that to dismantle and remove survey markers would be costly, considering their remote locations. As well, in the absence of a prominent marker and following regrowth of vegetation, the ground mark could be difficult to find. This fact, together with the closure of the access tracks, would render such trig stations virtually unusable.

The major impact of trig stations is probably aesthetic, because they are generally located on prominent points that are destinations for recreational trips and which can also be seen from a distance. Their installation and maintenance also results in some localised disturbance to the vegetation and soil, and may interrupt the activities of some insects such as those butterfly species that seek elevated sites during breeding. Most prominent peaks have trig stations; those that do not are valuable for that reason.

Other impacts arise from the disturbance to natural vegetation through the maintenance of sight-lines and the construction and maintenance of vehicular access.

As new technology becomes available, direct visual sighting of beacons or markers may become less necessary and it is unlikely that new trig stations will be required.

### Huts

Huts have been constructed on public land by graziers, government authorities, recreational



users, or in association with mining, engineering works or road building, logging, or vermin or weed control. Most are the property of the Crown. Two of the wilderness areas proposed by Council each contain one hut.

The direct physical and ecological impacts of huts are usually localised. Their use can be accompanied by damage to vegetation by the collection of firewood, trampling, disposal of refuse and human waste, presence of vermin, compaction of soil, and to some degree, an increased fire risk. Disturbance around the huts may also encourage invasion by weeds. The aesthetic impact of a hut arises primarily from the contrast with otherwise natural condition of its location.

Although Council has recommended that, wherever possible, all structures be removed, it recognizes that some huts and other associated structures in the proposed wilderness areas are of particular cultural interest and that it is appropriate to provide for their retention.

Council considers that it is inappropriate for recreational users to rely on such huts for refuge, shelter or accommodation in wilderness areas. Huts should be available for emergency refuge only (not accommodation), or as bases for essential management purposes (such as fire suppression or search and rescue operations).

### Navigation aids

Coastal navigational lights are maintained by the State Department of Transport and provide for hazard warning for ships sailing close to the shore. They are considered essential for safety. While in the past such navigation lights required vehicular access for regular servicing and replacement of fuel sources, modern solar-energy technology now means that most require only occasional maintenance. They are placed in locations which do not necessitate the clearing of sight-lines. One of the Council's proposed wilderness areas (Sandpatch) includes a navigation light.

### Other structures

Other structures found in wilderness areas include minor fences, stock yards, cairns, route markers and other relics of former use.

While most are unlikely to have any major ecological impact, they are nonetheless not part of the natural environment and may detract from the experience of those visitors expecting an essentially natural setting. Some structures, such as cairns resulting from early surveys, or yards or water races may, however, be of cultural interest.

### Principles

Council considers that the following principles should apply in determining the need for, and in the management of, existing structures:

- \* Wherever practicable, all structures should be removed unless they are determined to be of cultural significance, are essential for safety or site protection, or their removal would result in greater disturbance to the area.
- \* The principles outlined in Section 9 of this chapter - Cultural Associations - should apply in determining whether a structure has cultural significance and the nature of the management.
- \* Permanent survey markers and their associated survey beacons and markers are important parts of the State's geodetic survey, but there may be scope for rationalisation or limiting their prominence, particularly when new technologies are introduced.
- \* Only survey markers essential for the State's geodetic survey be retained. The 'first order' points will probably always be considered essential.
- \* A review of trig stations should seek to minimize the number that require cleared sight-lines for their operation; and for those considered essential, consideration should be given to using temporary markers or constructing a higher marker on the site (which could, however, increase the visual impact). Where possible, an alternative site be sought in preference to maintaining such cleared sight-lines.
- \* Navigation aids and associated structures important for maritime safety should be permitted to remain, but there may be scope for rationalisation. New



navigation aids should be located outside wilderness areas.

- \* The maintenance of trig stations and navigation aids should be subject to ongoing review and the recognition of alternative technologies.
- \* A review of the need for trig stations and navigation aids should be considered as part of the preparation of management plans.
- \* It is inappropriate for recreational users of wilderness to rely on huts for refuge, shelter or accommodation.
- \* When huts or associated structures are removed, all material should be removed from the site and the site itself rehabilitated.
- \* Unless otherwise required for essential purposes, any other disturbances associated with structures (such as tracks) should be closed and rehabilitated.

The following recommendation is made in accordance with Recommendations A1--A17(k) in Chapter A, which states that 'wherever possible, existing vehicular tracks or roads, structures or other facilities be removed, and areas of these and other disturbances be rehabilitated as soon as practicable'.

## **Recommendation**

### **C2 Existing Structures**

That

- (a) the relevant authority manage existing structures taking into account the principles outlined above
- (b) a review of existing structures within wilderness areas be undertaken in the course of preparing management plans, and those proposed to be removed be dismantled as soon as practicable (preferably within three years of proclamation of the wilderness area) and their sites rehabilitated

that

(c) essential trigonometric stations, route markers, and navigation aids be permitted to remain and be maintained

(d) huts and other structures of demonstrated special cultural interest be permitted to remain

and that

(e) if the removal of an otherwise unnecessary structure would result in greater damage to the wilderness area, it be permitted to remain, but not be maintained by the land manager.

## **2. Previous Utilisation Activity**

In some instances, rehabilitation work may be necessary to restore areas disturbed by previous utilisation such as grazing by domestic stock, or the utilization of timber, mineral or stone resources.

Few of the proposed wilderness areas have been subject to intensive utilisation in the past, although a number in the eastern highlands have been, or are currently being, grazed by stock. Some small previously logged areas have also been included in several of the wilderness areas to enable adoption of more logical boundaries (usually a catchment divide), but these comprise a very small proportion of the wilderness areas in which they occur.

### **Grazing by Domestic Stock**

Council considers it important to review the effects of grazing by domestic stock on naturalness values to ascertain the extent of damage and under what circumstances such areas could be restored to their previous condition.

The Australian natural environment has evolved over millions of years in the absence of hooved animals such as cattle, sheep, goats, horses and deer. Their presence in Victorian bushland is relatively recent and is incompatible with achieving one of the main objectives of wilderness areas. Management should, therefore, aim to remove (if possible) or control such animals in these areas.

The presence of livestock is often associated with other disturbances such as weeds, structures such as fencing and huts, and a



network of tracks. In addition, the presence of grazing activity itself was considered in the Preece and Lesslie survey as reducing biophysical values, and thus total wilderness quality.

Research into the effects of grazing by livestock indicates that this activity generally results in changes to natural vegetation communities in Australia and, in some instances, has caused major changes. In turn, these changes would affect the habitat of other animals in the ecosystem.

The alteration of indigenous communities by stock grazing is best documented for alpine and sub-alpine vegetation, but changes have also been recognized in other communities, such as in dry forests and in the Mallee. The available research has indicated that grazing by stock can damage soil, introduce and encourage exotic plant species, and change the relative abundance of native plant species.

Trampling by stock can compact the soil which can lose its organic content, making it less pervious to water and plant roots. Disturbed or cleared areas tend to favour the establishment of exotic species over native species and can also lead to soil erosion.

Seeds and other regenerative parts of introduced plant species may be transported within the digestive tracts or on the hides of stock that are moved from improved pastures to bushland. Many such introduced species are unpalatable to stock and are at an advantage when their competitors in the indigenous plant community are eaten. Even native plant species vary in their palatability, and selective grazing by stock has led to changes in the abundance of particular species.

The short native grasses of dry forest environments are frequently replaced through grazing pressure by introduced species that have an earlier growing season, grow taller, and die off earlier in summer. As a consequence, the introduced grasses have a strong competitive ability and present a greater fire hazard during summer than the former native vegetation.

Browsing and grazing by stock, especially sheep, has also been implicated in fostering rabbit populations. Browsing reduces the height of shrubs and encourages young shoots

which can then be reached by rabbits. Frequent fires are considered to similarly encourage rabbits.

The overall impact of grazing in some areas of the State has been severe. Although not preferentially grazed by cattle, moss beds and snowpatch herbfields in the Alps appear to be particularly vulnerable, and even limited grazing and trampling are considered by some to cause considerable damage. A brief study of grasslands on the Bogong High Plains suggests that, from a soil conservation perspective, they are now relatively stable under the present grazing regime. Nevertheless, in areas fenced off or excluded from grazing there has been substantial recovery of native plants.

Trampling, faeces, urine scalds and grazing of the herbs and grasses in the high country have been implicated in increasing the amount of bare ground which has, in turn, favoured the regeneration of shrubs. Following removal of grazing, it is likely that the shrubby vegetation will proliferate further and persist to the end of the plants' lifecycles (perhaps 50 years or so). The herbs and grasses will then replace them, having been protected in their early growth by the shrubs. Some concern has been expressed that this growth of shrubs increases fire hazard. It must be remembered, however, that alpine vegetation remains green and moist through most of the summer and only burns under extreme conditions. The herbs and grasses rarely burn.

In other environments, grazing pressure, particularly by sheep, is strongly correlated to reduced regeneration of many tree species such as callitris pine, black box, casuarina and other mallee woodland species. Regeneration of these species has occurred when stock has been removed and rabbits controlled.

It appears that, even where disturbance has been heavy, substantial (perhaps even complete) recovery can be expected following removal of stock. The process is slow, however, and the degree of recovery will depend on the period and intensity of the preceding grazing and the extent of damage. Research into these factors is incomplete, and the Council considers that further research should be a priority.



In the Kosciusko National Park, for instance, within some 20 years of the exclusion of cattle and sheep, the area of bare ground had substantially decreased, there had been a reduction of some weed species, and there was a substantial recovery of mossbeds. It is estimated that it would take at least 50 years to achieve something resembling the original condition of alpine vegetation. For some severely disturbed and eroded sites here, complete recovery may not be possible.

In Victoria's Alps, a number of plots from which cattle are excluded are showing similar recovery. Council considers it reasonable to assume from current information that, for those proposed wilderness areas which include grazed or formerly grazed land, the removal of stock can only lead to an improvement in their otherwise high wilderness qualities.

Many parcels of public land that are subject to grazing were excluded by the Council from further consideration for protection as wilderness areas. Such areas include those where the intensity of grazing appears to have significantly affected the structure of vegetation communities, such as in the Mallee.

However, some areas that have been or are presently being grazed, are included in proposed wilderness areas. In these, the original species composition and structure of the native vegetation appears to be still largely present and, because there are relatively few other factors which would reduce wilderness values, their overall values are high.

### **Timber Harvesting**

The specific impact on natural values resulting from timber harvesting depends on the methods used for harvesting and regeneration. All of them, however, produce an immediate impact on both vegetation and fauna. The larger the coupe, the greater the impact on local fauna and the slower the rate of recolonisation. Changes from the original composition of plant species may also result, depending on the source and mix of seed used for artificial seeding. Soils may be compacted during snagging and at log landings. Logging activities may also disrupt local water movements, increase stream turbidity at least in the short term, and be

associated with the introduction of weed species. Because logging roads are usually built to a reasonable standard for efficiency and safety, their impacts persist long after operations have moved elsewhere.

In Victoria, logging areas must be rehabilitated in accordance with the Code of Forest Practice. Timber harvesting impacts reduce over time as regeneration matures and the forest ecosystem stabilises. Not all regeneration is necessarily successful, however, and it must be accepted that such areas may not recover their original complement of plant species in the short term.

To assist the adoption of logical boundaries, a few, small logged coupes are included in some of the proposed wilderness areas. However, these are small compared to the surrounding undisturbed areas and impose minimal impact which should diminish with time.

### **Principles**

The aim of rehabilitation of disturbed areas should be to re-establish, as far as is practicable, the pre-existing processes and previous condition. Different approaches will be required for different areas and situations; for example, where local natural seed sources have been lost.

With respect to previously logged areas, following the usual rehabilitation and revegetation work carried out under the Code of Forest Practice, natural processes should be permitted to take their course. Fertilizers, particularly phosphorus, lime and trace elements, should be avoided because of their persistence, possible toxicity to native species, and potential to favour pest plants. Only local provenances of indigenous species should be used.

### **Recommendation**

#### **C3 Previous Utilisation Activity**

That where rehabilitation is required, emphasis be on fostering natural processes but, where active management is necessary to facilitate these processes in the short term, the methods used be those that create least disruption to the natural system.



### 3. Introduced Plants and Animals

About a quarter of the vascular plants found in Victoria's natural lands are naturalised introduced species. A wide range of introduced animals is also found. Introduced species that have become naturalised and native species which, subsequent to European settlement, have extended beyond their normal distribution or abundance, are the species of greatest impact on natural systems.

The presence of non-indigenous species is not only incompatible with the management objectives of wilderness, they also influence the development, composition and vitality of the indigenous vegetation and fauna.

#### Impact of Non-indigenous Plant Species

While it appears that little of Victoria's natural lands are completely free of non-indigenous species, those areas which are least affected are those where disturbing influences have been minor, have taken place long ago, or have occurred only once.

As indicated in the Descriptive Report on Map 7 - Weed Composition the areas least affected by weed invasion, that is - where the relative proportion of weeds to native species is less than 10%, generally correspond to the areas proposed for wilderness protection.

Introduced plant species can have major impacts on indigenous vegetation, both structurally and floristically. For instance, blackberry or furze can form dense thickets and lead to substantial alteration to the composition of a plant community. Over time, weed invasion or hybridisation may eliminate indigenous vegetation, and is thus a particular threat to individual populations of rare plants.

Alteration to the structure of a vegetation community by introduced plants will also impact on the habitat of animals, usually by affecting the availability of breeding sites. Weeds may also increase food supplies favourable to a particular animal species.

Fire hazard can also increase, through the rapid growth of weed species producing a significant build-up of biomass and, thus, fuel loads. Recreational capability of an area can be lost when heavy infestations of plants

impede access; and reduced species diversity can have a significant aesthetic impact.

#### Impact of Non-indigenous Animal Species

A wide range of introduced animals occur in the natural lands of Victoria. This includes 18 species of mammals, 12 species of fish, and 18 species of birds. Many were introduced over 100 years ago and have now established self-sustaining populations. Some species, such as the sambar deer, appear to be still expanding in distribution. Each has a different impact on natural systems.

It is sometimes assumed that the long-term presence of introduced species in an area implies some form of equilibrium with native wildlife. This may not be the case. For example, in one area where foxes have been long established, the rock wallaby population was found to be declining and facing local extinction, but showed a pronounced increase following the control of foxes. Even where the species complement appears to be stable, introduced species still produce adverse pressure, and active management may be required to maintain native species.

Exotic herbivores may browse selectively, leading to increased dominance of non-palatable plants, and may change native habitats to the extent that indigenous species may have difficulty finding food and shelter. Exotic predators (such as foxes, dogs, and cats) may prey on native species in a way and at a rate that the native species have not evolved to withstand. It is also thought that exotic predators outcompete some indigenous species such as the tiger quoll (which now has a restricted range within Victoria) and may have brought about the extinction in Victoria of the once-common eastern quoll.

Many introduced animals appear susceptible to, and could be vectors for, a number of livestock diseases. If an outbreak of disease occurred, this could have a major effect on the State's economy. Their dispersion would cause problems in combatting such disease. Feral cattle, goats, horses and deer are susceptible to a number of vesicular diseases, such as foot-and-mouth disease; and foxes, cats and wild dogs are susceptible to rabies. Most native species of wildlife, in contrast, do not appear to be susceptible to such diseases, although there is a need for more research.



Introduced mammal species found in the proposed wilderness areas include rabbits (widespread, although uncommon in areas of high elevation), hares, foxes, wild dogs (largely confined to heavily forested areas in the eastern highlands), and feral cats. Feral horses are still found in the eastern highlands towards the New South Wales border, and sambar deer are now found throughout much of the eastern highlands and are expanding eastward. Goats occur in the Mallee.

The impact of rabbits can be severe, particularly given their reproductive capacity. Rabbits can kill or severely retard the growth of shrubs and tree seedlings, reducing vegetative cover. This can increase the amount of bare soil and the abundance of non-forage species can lead to a loss of habitat for native wildlife. Selective browsing can lead to non-palatable plants becoming dominant, leading to a change in vegetation structure.

Rabbits, especially in high numbers, also compete directly with native animals for food. They may form the staple diet of feral cats and foxes. If rabbits were eliminated, cats and foxes may become less prevalent in the longer term, but in the short term are likely to increase predation on native wildlife.

Foxes catch and eat many smaller birds and some of the larger ground-dwelling birds. They also eat and spread blackberries and are carriers of bacterial and viral diseases. Native species form the major part of the diet of wild dogs, which may impact significantly on local animal populations as well as disturbing or maiming individuals.

Native animals also form a significant part of the diet of feral cats, particularly in the eastern highlands. Death of native species may result from bacterial infection from a cat's bite or from the trauma of attack. It appears that feral cat populations in the more remote areas are self-sustaining.

Horses are relatively close-grazing animals compared to cattle and are known to graze certain areas preferentially. There are an estimated 2000 feral horses in Victoria, principally in the north-east. Impacts arise from the trampling of vegetation, particularly in alpine areas; the establishment of tracks (although these are usually on the contour);

disturbance of soils, especially in steep country or pugging in areas subject to water logging; as well as nutrient input, introduction of exotic plant species, selective browsing and the reduction of water quality.

Sambar deer feed in family groups or small herds and browse a range of shrubs and grasses. Stags form mud wallows to define their territories and, particularly when in rut, roll in the wallows, and rub their bodies and antlers against trees, removing part of the bark. Other localised impacts include pugging of the soil of creek banks and disturbance to dense streamside thickets during calving. Knowledge about impacts of deer on native species is limited however. They are known vectors of, or susceptible to, certain livestock diseases.

Goats are heavy browsers and have the potential to significantly alter vegetation communities. They have large home ranges, especially in semi-arid areas, can breed rapidly, and herd in groups of up to 200 individuals.

The effect of introduced fish species on the indigenous aquatic fauna is difficult to ascertain as their introductions were closely accompanied by other artificial changes to Victorian waters. There is some evidence that certain introduced species have had deleterious effects on some native species and have caused changes in the species composition of aquatic fauna. Smaller native fish may also have been reduced in abundance as a result of predation by certain introduced fish.

Few introduced bird species have been recorded in the proposed wilderness areas.

### Control Strategies

Many introduced species can and have been controlled. Many common weed species, for instance, are found in disturbed areas, and by simply removing the disturbance they often fail to persist. Most active control strategies are species-specific, although some may adversely affect non-target species. Control may involve biological, physical or chemical techniques.

Often there is a need to link weed control with the control of pest animals, as the latter may facilitate re-invasion of weed species or prevent regeneration of indigenous plants.



Active revegetation is unlikely to be required in the proposed wilderness areas, as most areas of disturbance are localized. Introduced plants have not developed to the extent that they totally outcompete other plant species.

A wide range of techniques is available for the control of introduced animals. Those suitable for use in agricultural areas are often not appropriate for nature conservation areas and new approaches are being developed.

A variety of traps and lures are used to capture wild dogs. Although trapping is labour intensive, it is a favoured and reasonably successful control measure in response to attacks on livestock. However, non-target animals are also caught. The use of treadle-type snares, now required in all trapping programs in Victoria, and alternative trap siting can reduce this impact.

Electric fencing is a relatively cheap fencing method that has been used to reduce predation by wild dogs in farmland. The use of poison (usually 1080) baits appears the most effective measure for treating dogs in more inaccessible areas. The use of buried bait on bush tracks, especially where placed away from protective ground cover, can reduce the impact on non-target animals to negligible levels. Chemical attractants and repellants are being developed for use in both baiting and trapping, and may be used to make control more efficient as well as to deter non-target species.

Wild dogs (that is, all dogs living in the wild, including dingoes), feral dogs, dogs run wild, and dingo hybrids are proclaimed vermin under the *Vermin and Noxious Weeds Act* 1958. The Department of Conservation and Environment policy for wild dog control in areas managed under the provisions of the *National Parks Act* 1975 recognises that the pure dingo is an integral part of natural systems and provides for such control:

- to protect the primary production enterprises of nearby landholders in cases of confirmed 'dog attacks', where controls on private or other public land is not effective
- to protect a native species threatened in that area, where it can be clearly shown that dog predation is one of the significant pressures against its survival

- where the wild dogs are clearly domestic or hybrid dogs living in the wild.

It requires that such control measures concentrate on peripheral areas near pastoral land and be undertaken by departmental staff using shooting, treadle snares, or, in some circumstances, buried poisoned bait or electric fences.

Where true dingoes are suspected of comprising a significant proportion of the wild dog population in the area, the policy requires that control programs concentrate on the edges of particular problem areas rather than extending deep into public land.

Council supports this policy, and notes that the need for control within the proposed wilderness areas is likely to be low as most are remote from settlement.

Culling by helicopter has been used elsewhere to control large feral animals such as wild pigs, goats and feral horses. This generally leads to a rapid reduction in numbers but may disperse the survivors. Rounding up such animals with cars or using dogs or horses, and then shooting them appears to reduce numbers of large populations but is less effective. The use of shooting alone as a control measure is not effective against any of the established feral animals.

In semi-arid areas, the dependence of goats and horses on water can be used to advantage, and traps around water points have been successful. Control of rabbits by shooting does not appear to influence long-term population trends; it merely provides for sustained-yield harvesting. Effective control depends on regulating the number of juveniles. Fumigation, selective poisoning, and ripping of warrens combined with use of the myxomatosis virus and fencing appear to be the most effective control methods to date.

Most baits for terrestrial animals involve the use of 1080 (sodium monofluoroacetate). This substance is effective in the control of rabbits, wild dogs, cats and foxes. Many of the native animals are susceptible and the use of buried baits helps to reduce the impact on them. Uneaten 1080 breaks down in the soil although, in low rainfall areas, uneaten baits are collected and buried.



Even if a bait is all eaten by the target species, the carcass may subsequently be ingested by a native predator. Predators, such as tiger cats, can concentrate 1080 in their tissues by consumption of a number of affected prey (notably rabbits) and, as a result, are at risk. Normal national park policy is that 1080 be used only as part of the initial comprehensive knock-down of a population. Aerial baiting is not permitted in parks or wilderness areas.

Development of more species-specific materials aimed at reducing adverse impacts on native species is continuing; further research is essential.

### **Invertebrate Species**

There appear to be relatively few introduced species of invertebrates that have become naturalized in remote undisturbed areas. However, feral honey bees appear to be widespread throughout Victoria.

Possible ecological effects of honey bees include competition between bees and native insects, birds and mammals for nectar; changes to the behaviour of nectar-feeding birds; reduction to the density of native bees near hives; increased levels of cross-pollination and possible hybridisation between native plant species; and competition for nesting sites from swarming honey bees. Much of the evidence for these possible impacts is, however, tentative or inconclusive. More rigorous research into some of these aspects has been previously recommended by Council, and long-term research on their ecological impact is being carried out in South Australia.

Honey bees may aid in the pollination of weed species such as horehound. (Native bees cannot pollinate this species). Honey bees can also reduce the enjoyment and experience of an area for visitors, especially when water is limited.

While the impact of commercial honey bees, which are bred in captivity and managed to prevent swarming, can be reduced by ensuring that hives and water sources are located well outside the wilderness area boundary, the control of feral honey bees is much more difficult. Biological control is not feasible given the economic importance of commercial apiculture. Removal of artificial

water sources or fumigation with pesticides where populations are high may be useful techniques to explore.

European wasps also appear to be colonizing some natural areas.

### **Principles of Control Programs**

- \* All programs must be based on a detailed assessment of the extent and nature of non-indigenous species and their impacts relative to the impact of the available control techniques on natural systems.
- \* An integrated control programme is necessary to achieve long-term control of as many non-indigenous species as possible.
- \* Control techniques should be chosen to ensure maximum protection of non-target species, and to minimise disturbance to natural systems. To this end, they should be as site-specific and species-specific (or individual-specific) as possible.
- \* Where relevant, programs for control of non-indigenous plant species should be integrated with those for control of non-indigenous animal species.
- \* Emphasis on follow-up control should be on surrounding public land, especially upstream and external to wilderness areas; on vertebrate species such as dogs and horses that can readily migrate and recolonise; as well as on roadside weeds and access routes used by introduced predator species.
- \* Monitoring is necessary in all control programs, and rehabilitation work should be carried out where required.
- \* Where follow-up control is required (this is envisaged to only be required in special circumstances) emphasis should be placed on using, where possible, those techniques that do not require vehicular access.

The following recommendation is made in accordance with Recommendation A1--A17(j) in Chapter A which states that:



'measures required for the control and, where possible, eradication of non-indigenous flora and fauna be permitted, provided that the operational techniques used have due regard for the protection and maintenance of wilderness values.'

## Recommendation

### C4 Introduced Plants and Animals

That

- (a) emphasis of control of non-indigenous plant and animal species be to prevent their establishment by minimizing the factors that predisposes their invasion, and to this end
- (b) strict hygiene practices, to avoid the spread of pathogens (such as *Phytophthora*) and the regenerative parts of plants be carried out as far as practicable, particularly on any management vehicles entering an area
- (c) no non-indigenous animals be brought into an area unless required for essential management purposes, in which case strict food-hygiene practices shall be carried out
- (d) all areas of disturbance be rehabilitated; including, to the extent consistent with their need for fire management, removal of structures such as watering points and vehicular tracks which provide artificial habitats
- (e) high priority be given to the control of weed species in upstream sectors of catchments where they are above, but not included in, wilderness areas

and that

- (f) where non-indigenous species are found, specific and integrated control programs be instigated for each wilderness area according to the general principles outlined above and incorporated as an integral part of management plans.

Note:

It is not intended that the above recommendations preclude the use of dogs for *bona fide* search and rescue, security, or feral animal

control operations, where other techniques are unsuitable.

## 4. Fire Management

The high flammability of Victoria's vegetation and the history of very serious fires over the past century and a half justify public concern about measures to prevent, reduce the severity of, and suppress wildfire throughout the State. This concern was expressed in many of the submissions received by Council. It is also well recognized that fire is a natural occurrence in most Victorian ecosystems and is one essential component of their dynamics. However, when the frequency, intensity, or time of occurrence of fire and the area burned is changed significantly, as has occurred in Victoria since European settlement, ecosystems can be markedly altered.

It is important to examine the effects on natural processes of the fire management strategies commonly used in Victoria, and to consider those strategies most appropriate for wilderness areas.

Native vegetation in Victoria is much reduced in extent and is highly fragmented compared to pre-European time. As a result, it is not certain that complete recovery following wildfires will always be possible in the relatively small wilderness areas if the present frequency were to pertain. Much of the State has been burnt, and it is important to retain the remaining unburnt areas, especially in the Mallee or in rainforest and old age forests. On the other hand, fire is an important ecological factor in those communities, such as coastal heaths, that require fire for regeneration. It is therefore inevitable that active management with respect to fire protection will be necessary in wilderness areas.

Alternatively, there are those who argue that every possible method (such as fuel reduction burning, fire breaks, and extensive track networks) should also be used to prevent and suppress all wildfires in wilderness. Some also view a neighbouring wilderness to be a major fire hazard to private property.

However, prevention and control measures can markedly alter the ecology of the natural communities in which they are practised.



The effects of cleared firebreaks are similar to fire access tracks, the ecological impacts of which were discussed earlier in this chapter.

### Wildfire

There has been a general increase in the incidence of wildfires in Victoria between 1920 and 1984. Less total area has been burnt over this period but fire intensity has been greater. There has also been an increase in the area of land that has been fuel reduced and an increase in the total length of access road over this same period.

Forest roads give the public much greater access to forest areas, and people are the major cause of fires. For example, in forested areas of Western Australia, human activity is responsible for about 93% of unplanned fires, with only 7% caused by lightning. In the Kosciuszko National Park, 87% of wildfires in 1983 were found to have started beside public access points such as tracks and picnic areas. In Victoria, about 75% of all wildfires on public land are started by people. However, in Board of Works water catchments closed to public access, 84% of the fires originating in these areas were due to lightning. Since 1950, on an Australia-wide basis, only about 5 to 30% of wildfires with known causes were started by lightning.

With few or no tracks, and if the number of visitors remains relatively low (factors which are consistent with the objectives of wilderness), the probability of human-induced wildfire starting in wilderness areas is likely to be lower than the probability of wildfire starting in other similarly vegetated areas of the State. Indeed, surrounding land may be of greater fire hazard to wilderness; as noted by the Standing Committee on Environment and Conservation: '...the major cause of fires since European settlement has been escapes from agricultural and pastoral burning off'.

### Fuel Reduction Burning

As the name implies, fuel reduction burning seeks to reduce the amount of flammable material available for a potential wildfire by burning it at a safer and more convenient time. It does not necessarily reflect natural processes, nor does it aim to do this.

The effectiveness of fuel reduction burning varies with forest type. Conversely, the composition and structure of a plant community and associated fauna can be altered by the season of burning, frequency, intensity, extent and season of burning.

Fuel reduction burns usually employ low intensity fires to ensure control and are therefore generally conducted in spring or late autumn rather than in mid to late summer when wildfires caused by lightning mainly occur. It is the latter regime to which the native biota has evolved.

In spring particularly, some plant species may not be at a suitable vegetative state to survive burning, or they may not have produced seed. If burnt too frequently at this time, they may suffer local extinction.

To meet the objective of reducing fuel loads, most fuel reduction burning in Victoria is undertaken on a 3 to 12 year cycle. If too short a cycle prevails, it may be too frequent for many plant species to mature and set viable seed. (Almost all herb and shrub species produce seed within 7 years of a previous burn). Many animal species such as soil invertebrates are similarly adapted to recovering their normal population levels after occasional catastrophes such as wildfire. However, they may not be adapted to frequent population crashes such as might be caused by regular fuel reduction burns. On the other hand, populations of some common exotic species (like house mice and rats) recover more quickly after fire than some small native mammals. Frequent fuel reduction burns may, therefore, favour these rodents at the expense of indigenous species.

As an example, about 2 to 4 tonnes per ha of litter falls from dry sclerophyll (open) forest canopies each year and, taking account of assimilation into the soil, can reach a total of some 27 tonnes per ha after 30 years. At some sites in this forest type in the Wombat State Forest, the fuel accumulated over 80 years totalled about 14 tonnes per ha; marginally greater than the amount set as necessary for fuel reduction burning at an 8--12 year cycle. It is possible that the rate of deposition and assimilation may reach a balance in long-unburnt forests at acceptable fuel levels, a balance that cannot be achieved if interrupted by frequent fuel reduction burning. Accumulation of fuel after fires in



some areas is often initially very rapid and may reach pre-fire levels within three or four years. A major consideration, however, in discussions of the effects on fuel accumulation and fire behaviour is the vertical distribution of the fuel.

Reducing the width of prescribed burning zones, as has been suggested by some groups, may require more frequent burning to be more effective. This may, in fact, be of greater detriment than undertaking prescribed burning over a broader zone, where the potential to provide a mosaic of burning intensity exists.

In a number of cases, wildfires have been reported to be easier to control when they passed through areas that had recently been fuel reduced. Other sources suggest that there is little or no evidence demonstrating that fuel reduction burning or other fire prevention methods have actually been successful in reducing the overall extent, or severity of wildfires in Australia. Its efficiency, however, would depend upon the nature of both the vegetation and the wildfire. There is a need for more research on the effectiveness of fuel reduction burning.

The House of Representatives Standing Committee on Environment and Conservation stated that '...in locations far removed from inhabited places or from valued assets there may be no economic justification for carrying out control burning. It would be more effective and more environmentally acceptable to concentrate protection works closer to the assets to be protected'.

### **Aerial Fire Suppression**

Where resources permit, the use of aircraft for reconnaissance, access and suppression are now more widely used than in the past. Such use should be encouraged to help reduce the need for constructed tracks. If fire prevention works are reduced in any area, however, suppression costs increase. Aerial suppression is very expensive and requires nearby air support facilities like airstrips, helipads, and dams. However, the fire edge usually must be held and made safe either by people using hand tools or machines.

Fixed-wing aircraft require substantial areas as landing strips. Helicopters, on the other

hand, need relatively small clearings, provided the approach and departure corridors are sufficiently clear of obstacles. Such clearings in forested areas are usually found or constructed on hilltops or saddles. In some emergency situations, people are lowered from hovering helicopters and either walk out of the bush on completion of their work or construct temporary helipads using hand tools.

For the most part, however, helipads in Victoria's forests are constructed and maintained during similar work on tracks, and are thus usually associated with vehicular access.

Although most permanent helipads have been constructed in strategic locations, there is no guarantee that they will always be conveniently located for each requirement. In wilderness areas particularly, it is considered that permanent helipads should not be constructed. Rather, temporary ones should be made in response to the particular emergency and these be permitted to regenerate following completion of activities.

The impacts of permanent helipads on wilderness values are similar to those associated with clearings for trig points which were discussed earlier in this chapter.

Aerial suppression involves the use of fire retardant, foam and water. Chemical retardants frequently contain a compound of phosphorus, which is a limiting nutrient in many Australian ecosystems - excess amounts can adversely affect many native plants. In many situations, however, use of water is not as effective or feasible. With additional research, more environmentally sensitive techniques and approaches could be developed.

Where a suitable, accessible, water body has been available, helicopters with 'buckets' slung below them have been used to dump water on fires. Although this method may slow an advancing fire front, in almost every situation ground crews are still required to secure the fire line.

There is potential for the construction of 'heli-dams' for this application, but these would be limited in number by the availability of suitable water bodies within sufficiently large clearings. Construction of



such clearings and dams in wilderness areas should not be permitted.

### Fire Management in Wilderness Areas

Existing regional fire management plans include various regimes of fuel reduction burns, firebreaks and tracks in some of the areas now proposed for wilderness. Such regimes are likely to lead, in the longer term, to a significant alteration to the ecological character of an area. The principle of management of wilderness areas is to allow natural processes to occur without interference. However, management of fire is required because of its potential impacts. Nevertheless, it is important that fire protection measures in wilderness areas do not become more intensive than at present. In some areas, it may be practical to give further emphasis to such preventative measures (fuel reduction burning, firebreaks, and tracks) in surrounding public land - depending on the values of these areas.

As knowledge increases, the need for active manipulation in wilderness areas may be reduced further. Extensive research is required into fire histories of the main forest types, as well as appropriate methods of control and their impacts.

### Current Situation

At present, the Department of Conservation and Environment has the duty, under Section 62(2) of the *Forests Act* 1958, to carry out proper and sufficient work for the prevention and suppression of fire on public land. This work is carried out in accordance with regional fire management plans. The *National Parks Act* 1975 sets out the responsibilities for fire protection works in land reserved under that Act. The Department of Conservation and Environment has an adopted policy on fire management for wilderness areas. Key elements of this policy are:

- \* all wildfires will be suppressed
- \* the officer in charge of suppression operations is to employ from the suppression techniques available those techniques, together with tactics, which least affect wilderness quality. In particular, control lines, if required, will be chosen to minimise physical disturbance to vegetation and soil.

- \* fire protection planning is to ensure that, to the maximum extent possible and consistent with Departmental Fire Protection Instructions and the applicable management objectives, fire protection measures are concentrated on adjacent public lands forming a buffer to a wilderness area.
- \* fire protection planning should:
  - remove or reduce the possibility that a wildfire burns all or a major portion of the wilderness area
  - specify fire protection measures which avoid or have low impact on wilderness quality, that is, use aerial suppression techniques and avoid construction of tracks and cleared fire breaks
  - locate any essential works in a way which minimises disturbance and visual impact
  - state appropriate procedures for the safety of visitors should they be threatened by fire
  - specify that areas disturbed by fire protection or suppression are to be rehabilitated.

The policy also permits the use of fire for ecological purposes.

Council endorses this policy and considers that, given the complexities of fire management and need for additional knowledge, that further research work be undertaken. As results of such work become available, consideration should be given to reviewing the extent and frequency of fuel reduction burning which is being carried out or proposed to be carried out in wilderness areas, especially where these coincide with those few areas of the State with long unburnt native vegetation.

### Recommendation

#### C5 Fire Management

That

- (a) to the extent possible, fire protection measures be concentrated on adjacent public land, to prevent fire entering a wilderness as well as to protect property



and natural resources outside the wilderness

- (b) where necessary fire protection measures are required within a wilderness area, their impacts on the natural condition of the land be minimised and, in particular, avoid the upgrading and construction of new tracks or other facilities such as helipads or water storages
- (c) the measures necessary to control wildfires be taken in wilderness areas

and that

- (d) in suppression operations, where practicable, those techniques which least affect wilderness quality be used, and any areas disturbed by such activities be rehabilitated provided that the works to be undertaken do not compound the disturbance to the area.

## 5. Management of Specific Nature Conservation Values

The Descriptive Report notes that wilderness contributes to the maintenance of the general nature conservation values of whole communities because of its substantially undisturbed condition. Wilderness areas also make an important contribution to the conservation of individual species. In some cases, they contain the last remaining habitats of particular species of flora and fauna.

For most such species, the management required for their continued existence involves the protection of habitat and the maintenance of natural systems, allied with the rehabilitation of any disturbed areas, control or eradication of any non-indigenous species, and ecologically compatible fire management.

Management of rare or threatened species and communities, however, may often involve additional action such as manipulation of habitats to enhance their long-term success.

Such programs may be based on limited research, as knowledge of much of Australia's biota is far from complete. Many species are still undescribed, and the importance and role of species within communities and ecosystems are often poorly

understood. Much of this information can only be obtained where natural systems prevail.

Indeed, research into natural systems and ecological processes, and comparative research into modified environments require calibration against natural baselines. Areas with a high degree of wilderness quality can provide information for reference and research into ecological processes, evolutionary development, long-term climatic trends, and geomorphic processes.

Council considers that the management of the special nature conservation values of wilderness areas should not generally involve manipulation of natural systems, other than as a last resort, to reduce the influences of European settlement or to enhance the viability of rare or threatened species.

For instance, Council is aware that virtually every plant community in Victoria has been influenced to some extent by human-induced fires. Deliberate burning of vegetation has been used in various locations by Aborigines to flush kangaroos from scrub areas, by graziers to encourage the growth of palatable grass species, and in forestry operations to promote the regeneration of preferred tree species in logged areas. More recently, protective burning regimes have been established to reduce the fire hazard in areas adjacent to settlement or valuable timber stands. In some areas, fire has been deliberately excluded for unnaturally prolonged periods.

As indicated previously, Council is aware that to mimic ecologically favourable fire regimes requires substantial additional research and will require a progressive response. In addition, areas that have remained unburnt for long periods are rare in Victoria.

No single natural catastrophe such as a fire or drought, is known to have eliminated an entire natural community on the broad scale. The size, shape, and criteria used in determining the boundaries of the proposed wilderness areas should preclude such an occurrence. However, there may be exceptional circumstances where some techniques may be required to restore nature conservation values where local populations of indigenous species have been severely reduced.



## Principles

Council considers that the management of special nature conservation values in wilderness areas should be carried out in accordance with the following principles:

- \* Protection of undisturbed habitat and maintenance of natural systems and processes should be the primary purpose of management.
- \* Active manipulation of plant or animal communities (including manipulation of fire regimes or restocking areas) to enhance the viability of any particular species should be as a last resort, reserved for particular habitats of rare or threatened species, and when no other viable alternatives are available.
- \* Any restocking should be restricted to indigenous or previously indigenous species; and only after full research on the potential impact on the total system.

## Recommendation

### C6 Management of Special Nature Conservation Values

That

- (a) the management of special nature conservation values be carried out in accordance with the principles outlined above
- (b) research be undertaken into fire regimes and into the total ecological requirements of those threatened species and communities occurring within wilderness areas

and that

- (c) long unburnt areas be afforded special protection.

Note:

Protection of some sensitive areas, such as reference areas or the habitat of particular species, may also require restrictions on the use of the area by visitors.

## 6. Scientific Investigation and Study

Wilderness areas are an important potential source of information about ecological and geomorphic processes, evolutionary development, and long-term climatic trends.

They may provide a bench-mark environment against which some of the changes brought about by settlement, such as pollution levels and other environmental impacts, can be compared. Their value stems particularly from their more natural and undisturbed condition compared to modified environments in other parts of the State.

Wilderness areas, therefore, provide a natural baseline which can be used to calibrate comparative research. Such baseline data is of immense value for all types of land management and planning, especially land-use planning, environmental impact assessment, forestry, agriculture, and wildlife management.

In addition, they may be important for basic research into Australia's biota. Many species are still undescribed, and the importance and role of species within communities and ecosystems are often poorly understood. Much of this information can only be obtained where natural systems and processes prevail.

The majority of these avenues of scientific activity are dependent on direct access to an area. Under the *National Parks (Amendment) Act 1989*, scientific investigation may be undertaken, subject to the approval of the Director of National Parks and Public Lands, where it does not affect the value of the area as wilderness. This may involve low impact techniques such as setting out markers for survey quadrats, the taking of samples, establishing recording and monitoring stations, and laying of traps. Other techniques, such as biomass experiments (involving the removal of all biological matter from a specific site) and fish survey techniques utilising poisons or electro-fishing (which involve use of electric currents to stun fish), are considered inappropriate in wilderness and are not permitted.

Observation bores to monitor the degree of utilisation of groundwater and the movement



of saline groundwater are located throughout the Sunset Country and Big Desert, and more are planned. All are sited adjacent to existing tracks and none are planned to be within the proposed wilderness areas.

### Principles

- \* Scientific investigation in a wilderness area should only be carried out under permit and would only be appropriate if it cannot be carried out elsewhere. Its objectives should be dependent on the unique values of the particular area and be of a nature that does not conflict with protecting wilderness values.
- \* The research techniques employed should be subject to the discretion of the land manager and should not involve the use of vehicular access or motorised equipment; utilise non-indigenous species; require structures or other permanent markers to be established; or involve destructive forms of investigation.
- \* Limited sampling of material, including selective trapping or netting, and the use of temporary markers or monitoring equipment, may be permitted subject to consultation with, and the agreement of, the land manager (to ensure that site location, density, and sample quantity avoids impact on wilderness values).

### Recommendation

#### C7 Scientific Investigation and Study

That appropriate forms of scientific investigation or study be permitted in wilderness areas in accordance with the principles outlined above.

## 7. Recreational Use

Recreation encompasses an extremely diverse range of both indoor and outdoor pursuits. It is an intrinsic feature of our way of life and has numerous and diverse social benefits. Participation in recreation and in the provision of opportunities for it are also of economic benefit, forming the basis of our tourism industry. With increasing population and increasing availability of leisure time, the demand for recreational venues is also increasing.

The bulk of public land is available for recreational uses of some sort and the variety of reserves recommended by the Council provide for a range of recreational opportunities. While specific reserves have not been set aside for each form of recreation, most activities can be accommodated somewhere on public land. Council has generally left the details, including the appropriate zoning and level of each activity, to the land and water managers.

### Providing for a Particular Type of Recreational Experience

Outdoor recreational activities are undertaken in a variety of settings which vary according to the level of access, facilities, use and management. Camping, for example, takes different forms in various settings, from highly developed camping-grounds accommodating large numbers of people, through designated camp sites with few facilities, to remote areas without facilities where the emphasis is on self-sufficiency. Angling, hunting, canoeing, or fossicking can also be undertaken in a similar range of settings. Some activities may also require certain physical (including seasonal) environmental requirements (such as swimming, caving or skiing). Few forms of recreational activity could be described as totally dependent on a particular setting, although many are considerably enhanced by a particular one. Many people undertaking outdoor recreation may require different settings at different times, depending on the particular activity, or at different times of their life.

Although it may be desirable to provide for all appropriate recreation activities across the full range of settings, the nature of the land and population of a region means that not all settings can be provided in all areas. In particular, few areas contain remote recreation settings and there is a trend for activities to encroach into them. (Most of Victoria's public land provides semi-remote or roaded-natural recreation settings - see Figure 4 of the Descriptive Report.)

Wilderness areas provide for a range of self-reliant recreational activities in remote settings; that is, recreational settings characterized by unmodified environments, little evidence of other users, restrictions or controls, and with no use of vehicles or



introduced animals. The extent of these settings decreased markedly with the expansion of track networks since the 1950s.

It is important, however, to note that the proposed wilderness areas have not been defined by their capability for recreation, but rather by their relatively undisturbed condition. Notwithstanding this, most provide outstanding opportunities for some forms of self-reliant recreation.

### Appropriate Uses

Council has considered that uses of wilderness be determined according to their compatibility with the primary aim of management, which is to maintain or enhance wilderness condition; but that it is also appropriate to emphasise those uses which derive special benefits from such areas.

With respect to recreational uses, Council believes that those which are dependent on the retention of formed vehicular tracks, such as four-wheel-drive touring, trail-bike riding or mountain-bike riding, and activities reliant on the use of non-native animals, such as horse-riding, are all considered incompatible with the management objectives of wilderness areas.

As such, two major forms of recreational activity will not be provided for in wilderness - vehicular use and horse-riding. Notwithstanding this, Council considers that they both are appropriate uses of other public land and has, in its previous recommendations for other land use categories, provided extensive opportunities for these activities and experiences elsewhere in the State. In addition, many of the proposed wilderness areas have relatively limited capability for these activities and their boundaries generally avoid important routes such as the Bicentennial National Trail. Recreational fossicking for minerals, such as metal-detecting and gold-panning, would also be excluded, as it is in national parks.

However, wilderness areas will continue to be used for a variety of other recreational pursuits. Depending on the nature of the environment, such activities would include bushwalking, camping, fishing, canoeing and rafting, cross-country skiing, sight-seeing, nature study, swimming, fishing, rock climbing, caving, scuba and skin diving.

All recreational activities impact to some extent on the environment and on other people, depending on the interaction of such factors as:

- the nature of the recreational activity
- the intensity of use of an area, as measured by the number of participants, size of group, and the frequency, timing, and duration of the use
- the sensitivity of the environment to change
- the degree of management intervention to make the environment less sensitive to recreational impacts.

Generally, any one activity pursued at a low level of use poses little threat to the environment and seldom conflicts with other activities. With increasing level of use, however, conflicts and problems can arise, particularly that of damage to the environment and interactions between recreational activities.

Management activities which attempt to protect the physical environment in response to recreational use by making it less sensitive (typically by increasing the number and standard of access routes or facilities) may lead to increases in the use, as well as impact on the aesthetics and naturalness of the area. Small incremental changes can also, over time, lead to major changes in the range and number of recreational settings available in Victoria.

Council, therefore, believes that the land managers should aim at managing the levels and patterns of appropriate recreational activities according to the capability of the area to sustain such use (without observable damage or significant conflict with its primary purposes), while at the same time avoiding unnecessary restrictions. Particular care will be required to prevent environmental damage. Thus, restrictions could be expected where vegetation and soils are sensitive to damage; where the level of use is excessively high or is conflicting with the provision of opportunities for solitude; or where natural and cultural values are to be protected.

A number of recreational activities and issues that may require specific consideration by the managers of wilderness areas, whether now or in the future, are discussed below.



## Camping

Camping is generally associated with other recreational activities, such as bushwalking, fishing, canoeing, or hunting. Shelter and access to water supply are the main physical requirements.

Camping is permitted in most areas of public land including wilderness areas, although it may be restricted to designated sites. Impacts arise from soil compaction, loss of ground cover, damage to vegetation through firewood collection, increased risk of fire, and refuse and human waste disposal. Camp sites near streams are often also sites of environmental sensitivity. Indirect effects arising from disturbance to vegetation include soil loss and increased potential for the establishment of weeds.

Studies of the use of wilderness areas in America, where only pedestrian access is permitted, and one on the Baw Baw Plateau, have indicated that the damage at camp sites is the key observable impact of human use of such areas.

Such impacts can be reduced by the use of modern equipment such as sleeping mats and fuel stoves; and through low impact practices such as camping, washing, and burying human waste away from watercourses, not constructing trenches, and carrying out all rubbish. Some of these, such as minimum siting distances from water bodies (20 m) and fire regulations, may be subject to regulations under the relevant Forests or National Parks Acts.

Council is not proposing any specific controls on this activity, although it may be necessary to temporarily close over-used sites to permit recovery or to ration their use.

## Canoeing and Rafting

Most watercourses within the proposed wilderness areas are unsuitable for canoeing and rafting, mainly because they are generally headwater segments with low water levels or because of snags and debris. Even where navigable for part of their length, such sections may be unnavigable according to water conditions. The major exception is the Snowy River which has outstanding capability for white-water touring.

Sea-kayaking is a form of canoeing that is growing in popularity and is often undertaken near-shore and for touring along the shore by those seeking more challenging recreation.

Damage arising from water-based activities is greatest at river access points and camp sites, or where portages are required. Access to entry and exit points is generally by vehicle, and the boundaries of the proposed wilderness areas have excluded the most popular points of access. Campsites are generally on sandy banks and impacts are generally mitigated by the transitory nature of these features.

There are few existing restrictions on use, with the physical environment being the main limiting factor. Council is not proposing any specific controls on canoeing or rafting, although it may be necessary, particularly during periods of peak usage, to limit the number of river users at any one time to maintain the expectations of visitors to experience relative solitude.

## Fishing

Fishing is permitted, subject to the holding of a licence, throughout most public land in the State. In the more remote areas, recreational fishing is mainly along mountain streams. It is usually undertaken in summer in conjunction with other activities such as camping. An undisturbed setting is often an important contributor to the enjoyment of fishing.

Recreational fishing of inland waters often depends on the introduced brown and rainbow trout, although native species such as the Macquarie perch and blackfish may also be important. Most stream systems in the State now carry self-supporting populations of brown trout and sometimes rainbow trout.

The proposed wilderness areas generally only include small headwater streams, and the often dense riparian vegetation makes them unsuitable for fly fishing. As a result, most fishing here relies on bait which may be brought into an area or gathered on site.

The removal of native species is contrary to the primary management objective of maintaining natural systems. Fishing of native species and the stocking of streams for recreational purposes may lead to alteration



of natural population dynamics and to species competition. The overall impact of fishing is dependent on a range of factors including the type of equipment and technique used. Discarded fishing line and hooks can cause injury to others and to fauna, and unwanted bait and fish can contaminate water.

Fishing regulations provide limits to the number, type and size of fish taken or the type of equipment, technique or bait permitted, and prohibit fishing in defined waters. Some regulations, such as the closed seasons on the native river blackfish, are there to protect the fish; whereas others, such as limitations on netting and the number of rods and hooks that can be used, also aim to enhance recreational opportunities.

The Department of Conservation and Environment is presently preparing a policy on recreational fishing in inland waters, which will include policy for those areas managed under the *National Parks Act 1975*. In view of the general preference of recreational anglers to take introduced trout species, and the limited opportunities for fishing within the proposed wilderness areas, Council considers that the only special condition required in these areas, over and above those that may generally apply to national parks, is the principle that there should be no stocking of fish for recreational purposes. However, restriction restocking with fish indigenous to a stream may be permitted, in line with the principles for management of specific nature conservation site outlined above.

## Hunting

Four species of deer maintain viable populations in the wild in Victoria, three of which may be legally hunted. The sambar deer, found throughout much of the forested lands to the east of Melbourne, is present in a number of the proposed wilderness areas.

Sambar is the main species of deer sought by hunters. It is the largest deer found in Australia and is widespread. They have a keen sense of smell and hearing, and are very difficult to observe in the bush. Many hunters consider them to be the premier game species.

Both of the more common forms of deer hunting practised in Victoria - stalking,

which is the most popular, and hunting with hounds, the more traditional form - involve the use of firearms. Some hunters may use bows and arrows. Stalking usually involves the tracking of animals for some distance, often along creeks, gullies and through more remote areas, and requires interpreting signs such as wallows, rubs and browsing marks, tracks, and droppings. Deer are not, however, often sighted and kills are generally infrequent.

Hunters who use hounds rely on them to pick up and follow a scent until the deer is bailed up. Hound teams may consist of two or three dogs which need to be trained and used regularly. Most hunting is undertaken during the cooler months when the success rate is higher.

Feral goats and pigs, which occur in some of the more isolated parts of the State, are hunted. Brumby running, or the rounding up of feral horses, is undertaken in the eastern highlands, particularly towards the New South Wales border. It involves horse-riders assisted by dogs chasing and rounding up brumbies into constructed yards. The brumbies are used as farm pets or sold to knackeries.

Any forms of hunting that rely on the use of vehicles or non-indigenous animals, such as horses or dogs, or require the taking of native game, are considered by Council to be inconsistent with the primary management aim of wilderness areas and are not permitted under these recommendations.

Recreational hunting of introduced species using firearms is, in itself, unlikely to have a significant impact on the condition of the land. It is, however, dependent on the continued presence of introduced animals and many hunters use vehicles for access. Council is also aware that, for many people, the real or perceived hazard presented by the use of firearms can significantly reduce their enjoyment of an area.

While hunting may help reduce the numbers of certain introduced species, it is not considered to be an effective control technique - as discussed earlier in this chapter.

As stated in Chapter A, Council recommends that deer hunting by stalking be permitted in



three wilderness areas to provide some opportunity for this recreational activity in a wilderness setting. Otherwise, Council does not consider recreational hunting to be an appropriate use of wilderness areas.

Council recognises that to implement its recommendation that hunting be permitted in some wilderness areas would require changes to the *National Parks Act 1975* which generally prohibits this activity.

### **Skiing**

Skiing is an important winter recreation undertaken on public lands. Victoria's alpine zone, being that land above the tree line (about 1400 m), has frequent winter snowfalls and the snow-covered landscapes of the zone are a major recreational attraction.

Downhill skiing depends for the most part on facilities which are incompatible with wilderness. Cross-country skiing has a longer season than downhill skiing and has different facility requirements. It may involve day trips, or overnight trips using huts or snow camping. The expectations of the skiers can range from those seeking totally unmodified environments to those seeking marked and groomed trails. Areas above 1500 m are generally suitable throughout winter and spring. Areas down to about 1200 m may also be suitable after heavy snowfall. Flat to undulating country, or ridge tops and spurs, are usually preferred. However, any area of dependable snow may have potential to be used.

While some of the proposed wilderness areas meet the environmental requirements for cross-country skiing, their remoteness and difficulty of access in winter means that they experience little use. For these reasons, however, they may have particular appeal to some skiers.

Council is not recommending any special management guidelines for cross-country skiing in wilderness areas over and above ensuring that no additional pole lines are constructed.

### **Walking and Bushwalking**

Walking ranges from strolling and beach combing to bushwalking and snow walking.

Many people of all ages engage in some form of bushwalking, and virtually all public land is available for this activity. Bushwalking may involve short walks along established tracks and paths, to back-pack hiking through remote areas for long periods. Areas readily accessible to large population centres experience highest use. Long-distance defined walking routes, such as the Alpine Walking Track, and to a lesser extent the McMillan Track, may provide a focus for this activity.

Overnight bushwalking requires participants to be largely self-sufficient and usually relies on the presence of suitable water sources and campsites. Restrictions on camping are discussed earlier in this chapter.

Environmental impacts arising from pedestrian access include the trampling of vegetation and establishment of tracks, as well as increasing the risk of accidental fire and the possible introduction of non-indigenous plants. Impacts are often localised, arising from the provision of associated facilities such as tracks, toilets, and camp sites. Some of these impacts can be minimised by travelling in small parties, staying on any tracks, and spreading out in open untracked country.

In areas subject to intensive use, managers have often resorted to constructing tracks and elevated walkways, providing toilet facilities and designating campsites. Less-intrusive strategies are to limit the number of users by, a ballot or a permit system; or undertaking intensive educational programs and distributing codes of practice. Such alternative strategies are appropriate in wilderness areas.

However, few of the proposed wilderness areas are intensively used for bushwalking although many of them are ideally suited to this activity; most include a wide variety of destination points, potential routes or possible campsites. The impacts from bushwalkers are therefore reduced and, as a result, restrictive management practices are considered unlikely for the foreseeable future.

### **Other Activities**

Sightseeing and nature study, while often vehicle based, are not necessarily excluded



from the proposed wilderness areas where they are within a day's walk of vehicular access. In fact, a number of readily accessible vantage points lie close to the boundaries of some of the proposed wilderness areas and provide excellent views.

These activities can also be enjoyed without the use of vehicles. They may be pursued in their own right, but are more often ancillary to other forms of recreation. Participation, in the context of wilderness areas, may be dependent on the provision of information on features of interest and access routes. While ready access to facilities may be sought by some participants, others seek more unmodified settings. No special guidelines are proposed by the Council for sightseeing and nature study.

Other, more specialised recreational activities are undertaken on public land. They include caving, and rock climbing, much of which is club based. They occur throughout the State wherever appropriate physical environments are found. Such activities may be subject to seasonal restrictions or limited from specific sites (such as some caves) due to the presence of environmentally sensitive features. Vehicular access may be important for the transportation of equipment, and this facility may be limited in some of the wilderness areas. On the other hand, the restrictions on vehicular access may enhance the recreational experience.

Impact depends on intensity of use or on the techniques used; for instance, permanent bolts or pitons installed for climbing may damage rock faces and thereby reduce the experience available for subsequent climbers. Such fixed aids would not be permitted in wilderness areas. Other controls may be required in response to particular circumstances.

### **Search and Rescue**

A substantial increase in recreational usage in areas without ready access may lead to increased demand on the resources required for search and rescue, enforcement, and other management requirements. However, few inexperienced visitors would be expected to use such areas.

Management can have a significant role in reducing this potential effect by influencing

the location, intensity and timing of recreational use through the provision or otherwise of facilities, access, signs, the nature and amount of information provided, or the regulation of activity. Absence of track markers, route notes, or huts may discourage use of more remote and hazardous areas by people who lack suitable equipment and experience. It must be acknowledged by users of wilderness areas that experiencing nature on its own terms involves some element of risk; and that enjoyment depends on an individual's skill and preparedness.

### **Recreational Use by Organised Groups**

Organisations like schools, clubs, youth groups, and private companies involved in outdoor recreation have a valuable role in improving community access to public land and they may also contribute to the economy of the local region. Moreover, they may provide equipment hire, transport, skilled instruction, and interpretation of the environment in which the activity takes place, and set models for appropriate codes of conduct.

Organised activities of this nature may involve large numbers of people, both as participants and spectators. This may lead to overcrowding of some areas and demands for exclusive access to particular venues. Council believes activities involving excessively large numbers of people to be inappropriate in wilderness areas.

A large number of operators have been granted permits for commercial adventure tours within proclaimed national and other parks in Victoria. Tours offered include four-wheel-drive safaris, cross-country skiing tours, rafting expeditions, bushwalks, vehicle-based sightseeing tours, fishing tours, horse riding, snow-walking, nature study, bike-riding, history, photography, and hot-air ballooning. Some operators also offer drop-off and pick-up services for bushwalkers. The tours involve day, weekend and up to a week's duration. Although predominantly in alpine areas, tours also operate in the Sunset Country in the Mallee, the Little Desert, in East Gippsland, and elsewhere.

Conflicts are often greatest where groups are attracted to a particular locality, notably a camp site, lookout point, historical artefact, hut, a significant natural feature, or where access is restricted to a single trail.



The impact of commercial tours or structured activities on natural systems or experiential values, and their compatibility with each other, is not necessarily any different to any other similar form of recreational use. Impacts are associated rather with the size of groups, and frequency of use and the behaviour of individuals.

Under these proposed recommendations, competitive events will be actively discouraged in wilderness areas. Those tours or group activities involving use of vehicles or horses, as with all other users, would not be permitted.

As noted in Chapter A the conduct of permitted uses is considered appropriate by Council irrespective of whether they are carried out by private individuals, members of organised clubs, participants in commercial tours, or as part of a military training program.

### Public Participation

As recreation is the major direct use of wilderness areas, the involvement of peak recreation groups in the planning process is likely to lead to the early identification of key issues, and facilitate the development and implementation of management strategies and codes of conduct. Such recreation groups can also assist in the systematic documentation of recreation resources and in the development of acceptable methods of identifying and evaluating these.

### Principles

- \* Wilderness areas should continue to be available for a range of appropriate recreational uses other than those requiring motorised vehicles, bicycles, or introduced animals, such as horses or hounds.
- \* The type, intensity and patterns of recreational use should not exceed the capacity of particular areas to sustain that use and should not conflict with the primary management objective of the respective areas.
- \* Where the use of an area approaches

capacity, alternative areas should be encouraged, where appropriate; or other actions undertaken (such as permit systems) to limit the impact on wilderness areas.

- \* Special attention should be given to the cumulative impact of small changes that may affect recreational opportunities and the wilderness condition of the areas.
- \* Compatibility between various recreational activities should be considered and, in particular, the need to ensure that opportunities for visitors to experience solitude are maintained.
- \* Relevant peak recreation groups should be involved in the planning process, in the dissemination of education material, and the preparation of codes of conduct.
- \* A code of conduct should be encouraged (in consultation with user groups), rather than the promulgation of regulations, for responsible behaviour and use of minimal-impact camping and bush-walking techniques in wilderness areas. This should encompass elements such as encouraging groups to limit their size, limiting the length of stay at campsites, scheduling trips to less busy periods, and defining hygiene practices regarding possible introduction of seed sources.
- \* Use of wilderness areas by large groups - whether private, commercial, or institutional - should be discouraged.
- \* Unless essential for safety or site-protection, no additional recreational facilities or tracks should be provided, nor should any existing facilities or tracks be upgraded.
- \* Recreational fishing should be permitted consistent with the maintenance of native fish populations through natural replenishment and in accordance with the management goals for the respective area; and stocking with fish indigenous to the stream only be permitted in line with the principles for management of specific nature conservation values.



## Recommendation

### C8 Recreational Use

That

- (a) recreation in wilderness areas be managed in accordance with the principles outlined above
- (b) recreational hunting for deer by stalking be permitted in three wilderness areas as specified by the Council (see Chapter A), to the extent consistent with visitor safety and minimal impact on other users

and that

- (c) a code of conduct for the recreational use of wilderness areas, encompassing the major elements discussed above, be developed by the managing authority in consultation with appropriate groups; and it be widely distributed.

## 8. Other Forms of Direct Use

Other non-recreational activities that may involve the direct use of a wilderness area include scientific research, education, mineral exploration, commercial tour operations, and training exercises.

### Education Activities

In common with other natural areas, wilderness areas provide a valuable educational resource.

Council's recommendations across the State have provided for Education Areas for observation, the practise of methods of environmental analysis, as well as the conduct of simple long-term experiments. It recognised also that the value of such education is enhanced by comparison of ecosystems - between the education areas and other natural and modified ones.

By definition, a wilderness area contains a tract of land in a natural and undisturbed condition in which active management of habitat (other than to reduce the influences of European settlement) would not take place. Use of these areas for educational purposes would also, therefore, be passive.

As well, the remoteness of wilderness areas and their philosophy of management would determine that their use for education purposes would be relatively low and usually more accessible areas would be favoured. Indeed, the use of alternative sites would be encouraged to protect the intrinsic values of wilderness.

## Recommendation

### C9 Education Activities

That use of wilderness areas for passive educational purposes be permitted subject to the principles outlined above for scientific investigation and recreation.

### Mineral Exploration

Mineral exploration encompasses the search for new mineral deposits. Exploration is a diverse, continually changing research activity, employing a number of different scientific techniques and methods. Mining embraces the extraction of the minerals. Although exploration and mining are part of the one process, exploration is not mining, and only rarely results in mining.

Modern society is dependent on a wide variety of metallic and non-metallic minerals, including fossil fuels. New supplies of these resources are needed to replace diminishing reserves from existing sources, and to supply additional resources and new materials to meet growing and changing market demand and changing technologies.

Although most of the outcropping and shallow deposits in Victoria have already been located, it is believed that there is considerable potential for further deposits to be discovered.

Exploration effort is generally determined by a number of factors, economic (such as demand and expected returns) being the most important. These factors change, as do the theories of the formation of mineral deposits and the techniques available for exploration. Because of this changing nature of exploration, repeated access to land is required to enable refinement of the knowledge of Victoria's mineral resources.



A spectrum of techniques are employed in mineral exploration, ranging from the regional scale to the prospect or local scale. These are generally employed in sequence with the intensity of work inversely proportional to the area involved.

At the regional level, techniques that produce no, or only minor, impact on natural systems are used. This phase of exploration would generally involve, in sequence:

- remote sensing, geological mapping and sampling at a reconnaissance level, and geochemical sampling of regional drainage systems
- follow-up geochemical sampling of anomalous areas
- geochemical sampling of regional soils and/or regional geophysical surveys.

Remote sensing includes any detection or mapping techniques carried out from aircraft or spacecraft. It includes airborne geophysical surveys, aerial photography, and use of satellite imagery. These activities do not cause ground disturbance, but low flying aircraft may cause annoyance. Any unusual structures or features identified from the aerial work are inspected on the ground.

Geological mapping involves the recording of field data on maps and photographs. Regional geochemical sampling involves collection of sediment from the bed or banks of watercourses (about one 5 kg sample per 5 sq.km). Analysis of these samples permits identification of those catchments most likely to contain a deposit. These activities usually involve one or two people travelling on foot or in vehicles. (The latter would not be permitted in wilderness areas).

Mapping and sampling of drainage lines, in those catchments considered prospective, are then undertaken in a manner similar to, but more intensive than, regional sampling to identify the source of the anomalies. These are typically of the order of one sample every 500 m or so along the drainage line and/or at each creek junction. Interesting rocks identified during mapping are frequently collected for later assay (up to twenty 5 kg drainage samples and up to fifty 2--3 kg rock samples per 5 sq.km of catchment).

Regional geophysical surveys similarly help define the positions of prospects and may be

air- or land-based. Airborne surveys involve the aircraft making multiple passes over a selected area at low altitude on set lines. Instruments in the aircraft record a variety of information, such as the Earth's electro-magnetic and gravitation fields, and the radiation levels from the rocks and soils. Land-based geophysical surveys measure similar parameters but employ hand-held or back-pack instruments, or portable stations with recorders spaced at fixed distances.

Approximately 90% of exploration programs terminate at this stage due to the lack of definite prospects. If any areas of interest are found, the prospect phase of an exploration program would be undertaken.

This prospect phase normally requires more detailed geological mapping and rock sampling (up to twenty 1 or 2 kg samples for a given prospect). If warranted, a more systematic sampling of rocks and soils for geochemical analysis and/or detailed geophysical surveying would take place.

The latter involves measurement of the physical properties of the Earth at various sites on a grid. The techniques used, such as magnetometry, radiometrics, and gravity and electromagnetic surveys, involve measurements by one or two operators on the ground but with no disturbance of the soil. Induced Polarisation surveys involve passing an electric current through the ground and measuring any induced effects. Measurement of seismic waves by explosive charges or other methods may also be used but would not be permitted in wilderness areas.

Narrow (150 mm) trenches may be dug in areas of particular interest for further sampling. Drills may also be used to investigate possible mineral concentrations in areas of identified potential. This would not be permitted in wilderness areas.

All of these processes rely on the establishment of reference points. To this end, small grids of wooden pegs are established by tape and compass survey. Prospect grids usually cover less than 1 sq.km, with pegs usually placed 50 m apart on lines at 100 m intervals;. They are usually 'flagged' with tape, but lines are not cleared. New technologies, such as biodegradable tapes to help reduce aesthetic impact and hand-held navigation aids using



satellite technology make it unnecessary for long term retention of other than one or two reference pegs to identify the grid.

Council believes that mining is incompatible with the protection of wilderness areas. However, mineral exploration improves knowledge of not only the mineral potential of an area, but the geology, levels of metal in stream sediments and soils. Resource assessments may be undertaken by government agencies or academic institutions, as well as mining companies. While Council is aware that the *National Parks Act 1975* prohibits new licences for mineral exploration in parks and wilderness areas, it nevertheless believes that it could be permitted in such areas if carried out in accordance with the following principles. Techniques that employ mechanical disturbance, such as explosive charges or trenching, however, would not be permitted.

Consistent with Recommendations A1--A17(h) in Chapter A, mineral exploration involving minimal disturbance to the natural environment should be permitted in wilderness areas according to the following principles.

### Principles

- \* Mineral exploration should be viewed as a form of research activity.
- \* Mineral exploration should only be permitted in wilderness areas when the specific information sought cannot be obtained elsewhere.
- \* All data collected as part of mineral exploration activity should be placed on public record; and be available to geologists or other research workers in institutions and other organisations on expiration of the exploration licence or permit in accordance with the provisions of the *Mineral Resources Development Act 1990*.
- \* No structures may be erected, vehicular tracks constructed, or vegetation removed.
- \* Access within a wilderness area shall be on the same basis as that for other members of the public (that is - on foot).

- \* No motorised equipment or non-indigenous animals may be used. Small hand-operated augers may be used, however.
- \* Where the taking of samples is required, this should be subject to consultation and agreement with the land manager (to ensure that sample site location and density and sample quantity avoids impact on wilderness values).
- \* Where survey grids are to be used, the use of satellite navigation aids should be encouraged. If pegs and tapes are used, these be removed on the completion of survey.
- \* Geophysical survey techniques that involve use of large electric currents or explosive charges or trenching should not be permitted.

### Recommendation

#### C10 Mineral Exploration

That

- (a) regional-scale remote sensing, geological mapping and sampling, geochemical sampling of drainage lines and soils, and geophysical surveys be permitted activities in wilderness areas where they are carried out in accordance with the above principles
- (b) prospect-scale geological mapping and sampling, soil geochemical sampling, and geophysical surveys be permitted after consultation with the land manager and provided they are carried out in accordance with the above principles

and that

- (c) where, at the completion of an exploration program, a company considers that an economic prospect occurs and wishes to undertake mining, the government should determine whether mining should take place and whether a review of land use is warranted. It may then determine that the Land Conservation Council should provide advice on land use.



## Notes:

1. Council is aware that, in recommending that certain forms of mineral exploration be permitted in wilderness areas, amendments will be required to the *National Parks Act 1975*.
2. Council acknowledges that companies undertake mineral exploration in the expectation of finding and exploiting an economic prospect. However, companies should be aware that it is unlikely that mining would be permitted in a wilderness area.

### Commercial Tour Operators

Earlier in this chapter (see section 7 - Recreational Use), Council expressed the view that the recreational activities permitted in wilderness areas are appropriate irrespective of whether they are carried out by private individuals; members of organised clubs, or commercial tour operators. Impacts on wilderness values are related rather to the size of the groups and the frequency of use.

Commercial operators are required to hold permits to use land reserved under the *National Parks Act 1975*. This requirement enables the land manager to determine where a tour operates and the numbers of people taking part. This is particularly relevant to the use of wilderness areas.

Where commercial operators employ experienced guides, this can ensure that low impact camping techniques are used and assist in the interpretation and appreciation of wilderness values by visitors.

However, some commercial tours, are forced by time, transport, or the type of client into using a limited number of areas or routes. This can lead to over-use of such areas and, where the land manager limits use to avoid degradation, this may cause conflict through restrictions on the tour operator or through the operator seeking exclusive access to an area. Council is firmly opposed to any group having exclusive use of public land.

The principles for use of wilderness areas by commercial tours are considered to be similar to those for other recreational users of wilderness areas, hence the principles and recommendations stated previously should apply. A balance needs to be established between both groups of users.

### Training Exercises

The Australian defence forces undertake training on public land, including some areas now proposed as wilderness areas. Training ranges from simple bush survival and small-scale infantry manoeuvres to exercises involving large numbers of personnel. A variety of transport, including motorcycles, all-wheel-drive vehicles and heavy tracked vehicles may be used, both on and off-road.

Council believes that military training is a legitimate use of public land, but is aware of the possibility of it conflicting with some forms of recreation and the protection of natural values. It has been Council's view in the past that military training should not take place in reference areas or wilderness areas; and only under special circumstances in parks and other areas of recreation and conservation significance.

While the impact on the land may be high when large numbers of personnel are involved, and base camps established and vehicles used, many of the training exercises are similar to, and of no greater impact than, the operations of other organisations providing skill training for outdoor activities.

Many such organisations, including the Victoria Police, the State Emergency Service, Outward Bound and a number of community groups, also provide training programs in search and rescue and survival techniques. Where an exercise is proposed in a wilderness area it should be undertaken in a manner consistent with the requirements placed on other users. That is, it should not involve vehicular or horse-based access, and should be carried out in a manner that does not impact on natural systems.

Although Council considers that most forms of military training should be excluded from wilderness areas, restrictions on those training activities that involve simple bush survival and navigation exercises on foot and in small groups should be the same for Department of Defence personnel as for other organisations. Nevertheless, alternative sites should be actively sought before the decision is made to utilise wilderness areas.

Military training areas may be declared by the respective Commonwealth Minister only with the approval of the land owner - which



includes the Victorian Government in the case of public land.

## Recommendation

### C11 Training Exercises

That

- (a) the principles outlined for recreational use of wilderness areas, which exclude the use of motorised or mechanical vehicles or equipment, apply equally to military, search and rescue training, and survival technique training

and that

- (b) where the training of military personnel is proposed, the size of group, types of activities, their timing, and location, be subject to agreement between the Department of Defence and the Department of Conservation and Environment, and be consistent with the protection of wilderness values.

## 9. Cultural Associations

Cultural associations with the areas now proposed for wilderness vary in their expression and significance. In a material form, their expression could range from stone artefacts illustrative of Aboriginal camps over past millenia, to the mullock heaps of a Nineteenth Century gold prospect, or a stone cairn established in this Century. Non-material associations reflect the way in which people feel about such areas. For instance, the attitudinal survey commissioned by Council indicates that Victorians value areas which contain wilderness attributes, although they may never visit them.

Features and sites of significance to Aboriginal communities may be identified from oral traditions or archaeological evidence. Approaches to the protection of such features and involvement of local Aboriginal communities in their management, are detailed in the Victorian *Archaeological and Aboriginal Relics Preservation Act 1972* and the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. No additional measures are proposed by Council.

Under the umbrella of the International Charter for the Conservation and Restoration

of Monuments and Sites (ICOMOS), a charter for the conservation of places of cultural significance - The Burra charter - has been prepared.

The Burra charter provides broad principles for the maintenance of such places in terms of their preservation and restoration and includes provision for reconstruction and adaptation.

The following principles and recommendations relate mainly to material evidence of previous direct uses of wilderness areas, particularly structures such as huts, yards, and former access tracks.

### Principles

- \* Although an objective of management is to minimise the evidence of human modification, it is recognised that, where structures or other artefacts have been assessed according to the principles of the Burra Charter to be of significant cultural association, these should be retained.
- \* The significance of a site is not necessarily related to the age, condition, or even the presence of a structure.
- \* The significance of an extant structure may arise from its association with a previous land use or user, the nature of its construction, its age, or the period of continuous use.
- \* Any assessment concerning aspects of cultural heritage should include consultation with groups or individuals with an interest in that heritage.
- \* Extant structures or other artefacts of cultural significance should be conserved, interpreted and managed in a manner consistent with the maintenance of wilderness quality.

## Recommendation

### C12 Cultural Associations

That

- (a) management of cultural significance issues be in accordance with the above principles



that

- (b) a detailed assessment of the significance of all extant structures be undertaken in accordance with the principles of the Burra Charter and in conjunction with the preparation of management plans, and only those assessed to be of cultural significance be retained and managed to protect their identified values
- (c) those structures to be retained be managed to preserve their historic or intrinsic qualities, and to this end:
  - (i) additions or alterations not relevant to those qualities be removed
  - (ii) they be available for public visitation to the extent consistent with protection of their historic value
  - (iii) the land manager maintain structures of significance but that they not be rebuilt

and that

- (d) where structures or additions to structures are to be removed, the site be rehabilitated in line with Recommendation C2 above.

## 10. Air and Water Quality

In the Morgan survey undertaken for Council, smog or air pollution were the factors most often suggested as potentially spoiling wilderness or its enjoyment. Extensive research in the US has shown that changes in air quality, particularly hazes or plumes, have a significant negative effect on the recreational experience obtained within a wilderness. Given the location of the proposed wilderness areas, the probability of such events is at present very low, except perhaps for cases of smoke from bushfires.

The Morgan survey also indicated that water quality, particularly the potability of streams, was an important issue of concern in wilderness areas. Water quality may be reduced by point-source discharges and diffuse source pollution, such as that carried

by run-off. In addition to affecting a person's experience, reduced water quality can adversely affect a wide range of environmental values of streams.

The risk of changes to air and water quality can be minimised by ensuring that proposed wilderness areas are as remote as possible from industrial and major urban centres, and land subject to intensive agriculture. In the case of air quality, while a reduction in the extent of protective burning may be of assistance, Council believes that a greater benefit is served by continuation of such a practice.

In the case of water quality, incorporation of stream catchments within wilderness areas will assist. Within wilderness areas, water quality can be maintained or improved by adopting specific practices, for example:

- elimination of stock grazing and stream stock watering points.
- rehabilitation of disturbed areas
- encouragement of minimum impact camping and hygiene practices
- minimising water crossings by vehicles

State Environment Protection Policies (SEPPs), made under the *Environment Protection Act 1970*, set air and water quality standards for all areas of Victoria. The SEPP (The Air Environment) has the objective of protecting the life, health and well-being of humans to the fullest extent possible, and, in other than designated buffer zones, the life, health and well-being of other forms of life, ensuring good visibility, and aesthetic enjoyment.

The SEPP (Waters of Victoria) sets the highest level of protection for waters of the 'Aquatic Reserves Segment' which includes reference areas, marine reserves, and a number of national and State Parks.

Council considers that it is important that the quality of air and water associated with wilderness areas be of the highest standard possible, and to this end, no activities be permitted which adversely affect the quality of water in wilderness areas.



## Recommendations

### C13 Air and Water Quality

That

- (a) the designation of 'buffer zones' under the SEPP (The Air Environment) over wilderness areas not be permitted.

and that

- (b) all proposed wilderness areas be included in Schedule A1 of the SEPP (Waters of Victoria).

## 11. Monitoring Indicators

Council's recommendations for wilderness require that each area's natural condition be protected, while, at the same time, be available for use by the public. Human use, however, inevitably causes some changes to natural conditions. It is important that such changes be monitored to provide a factual base, so that management and usage levels can be modified to ensure the maintenance of natural conditions.

A project involving nearly 100 scientists who have worked in wilderness in the United States of America has been undertaken to identify and evaluate possible indicators of wilderness condition. The indicators were evaluated in relation to their responsiveness, feasibility and reliability.

Indicators that seemed to offer the best potential to monitor biological conditions included the loss of ground cover at campsites and track corridors, the number and distribution of campsites per unit area or the total area disturbed by campsites, and the abundance or population trends of particular wildlife species that are sensitive to human presence. Indicators with the best potential to monitor visitors and recreational experience included the number of visitors or groups per unit area per day, the distribution of visitor-use over a week or season, the number of other groups encountered while at a campsite, on tracks or each day, and the quantity and distribution of rubbish.

It would also be useful to establish baseline data and indicators to monitor ecological changes and the impact and success of

management activities related to the control of fire and control of introduced plants and animals, as well as in relation to peoples' wilderness experience.

## Recommendation

### C14 Monitoring Indicators

That

- (a) the Department of Conservation and Environment establish a set of indicators to be incorporated into management plans against which the land use objectives of wilderness areas be monitored

and that

- (b) following the establishment of base-line data, monitoring of wilderness areas be undertaken and be carried out in conjunction with other monitoring programs.

## Bibliography

### Air and water quality

Rowe, R.D., and Chestnut, L.G. (1983). *Managing Air Quality and Scenic Resources at National Parks and Wildlife Areas*. (Westview Press Inc.: Colorado.)

### Fire

Australia (1984). *Bushfires and the Australian environment*. Report by the House of Representatives Standing Committee on Environment and Conservation. (The Parliament of the Commonwealth of Australia, Australian Government Publishing Service: Canberra.)

Campbell, A.J., and Tanton, M.T. (1981). Effects of fire on the invertebrate fauna of soil and litter of a eucalypt forest. In: A. M. Gill, R. H. Groves and I. R. Noble (eds) 'Fire and the Australian biota'. (Australian Academy of Science: Canberra.)

Christensen, P., Recher, H., and Hoare, J. (1981). Responses of open forests (dry sclerophyll forests) to fire regimes. In: A. M. Gill, R. H. Groves and I. R. Noble (eds) 'Fire and the Australian biota'. (Australian Academy of Science: Canberra.)



Department of Conservation and Environment (1989). Horsham region. Draft fire protection plan. (Department of Conservation and Environment: Melbourne.)

Department of Conservation and Environment (1990). Orbost region. Regional fire protection plan. Department of Conservation and Environment: Melbourne.)

Gill, A.M. (1981). Post-settlement fire history in Victorian landscapes. In: A. M. Gill, R. H. Groves and I. R. Noble (eds) 'Fire and the Australian biota'. (Australian Academy of Science: Canberra.)

Good, R.B. (1981). The role of fire in conservation reserves. In: A. M. Gill, R. H. Groves and I. R. Noble (eds) 'Fire and the Australian biota'. (Australian Academy of Science: Canberra.)

Groves, R.H., (ed) (1981). Australian Vegetation. (Cambridge University Press: Melbourne.)

Kemp, E.M. (1981). Pre-quaternary fire in Australia. In: A. M. Gill, R. H. Groves and I. R. Noble 'Fire and the Australian biota'. (Australian Academy of Science: Canberra.)

Lunt, I.D. (1990). Impact of an autumn fire on a long-grazed *Themeda triandra* (kangaroo grass) grassland: implications for management of invaded, remnant vegetations. *Vict. Nat.* 107: 45-51

Rawson, R., Billing, P., and Rees, B. (1985). Effectiveness of fuel-reduction burning. Fire Protection Branch Research Report No 25. (Department of Conservation, Forests and Lands: Melbourne.)

Singh, G., Kershaw, A.P., and Clark, R. (1981). Quaternary vegetation and fire history in Australia. In: A. M. Gill, R. H. Groves and I. R. Noble (eds) 'Fire and the Australian biota'. (Australian Academy of Science: Canberra.)

Slatyer, R.O. (1975). Ecological reserves: size, structure and management. In: E. Fenner (ed.) 'A national system of ecological reserves in Australia.' (Australian Academy of Science: Canberra.)

Tolhurst, K. (1984). Fuel reduction burning in Victoria. *Victorian State Foresters*

*Newsletter* 57:86-92

Underwood, R.J., and Christensen, P.E.S. (1981). Forest fire management in Western Australia. (Forests Department of Western Australia: Perth.)

Wimbush, D.J., and Costin, A.B. (1979c). Trends in vegetation at Kosciusko, III: alpine range transects, 1959-1978. *Aust. J. Bot.* 27: 833-71.

Yahner, R.H. (1988). Changes in wildlife communities near edges. *Conservation Biology* 2:333-9

### Grazing

Arnold, A.H. (1977). A review of the effects of grazing natural ecosystems in Victoria. Technical Review Paper. (Department of Crown Lands and Survey: Melbourne.)

Ashton, D.H., and Williams, R.J. (1989). Dynamics of the sub-alpine vegetation in the Victorian region. In: R. Good (ed.) 'The scientific significance of the Australian Alps'. *Proc. 1st Fenner Conf. on the Env. (Canberra 1988)*. (Australian Alps National Parks Liaison Committee and Australian Academy of Science: Canberra.)

Barnett, J. (1998). Alpine grazing - the research. *Park Watch* 154: 8-10

Costin, A.B., Wimbush, D.J., Kerr, D., and Gay, L. W. (1959). Studies in catchment hydrology in the Australian alps I: trends in soils and vegetation. CSIRO Division of Plant Industry, *Technical Paper No 13*.

Department of Crown Lands and Survey (1977). Grazing on Crown Land. Bulletin No 5. Dept. Crown Lands and Survey, Melbourne

Hobbs, R.J., and Atkins, L. (1988). Effects of disturbance and nutrient addition on native and introduced annuals in plant communities in the Western Australian wheatbelt. *Aust. J. Ecology* 13: 171-9

Preece, K., and Lesslie, R. (1987). A survey of wilderness quality in Victoria. Report to Ministry for Planning and Environment, Victoria (Melbourne) and Australian Heritage Commission (Canberra).



Saunders, D.A., Hopkins, A.J.M., How, R.A. (eds) (1990). Australian Ecosystems: 200 years of utilisation, degradation and reconstruction; Proceedings of the Ecological Society of Australia, Vol 16. (Surrey Beatty and Sons Pty Ltd: Sydney.)

van Rees, H. (1984). Behaviour and diet of free-ranging cattle on the Bogong High Plains Victoria. Publication No 409. (Department of Conservation, Forests and Lands: Melbourne.)

van Rees, H., Papst, W.A., and McDougal, K. (1984). Monitoring of the grassland community on the Bogong High Plains. (Soil Conservation Authority Technical Report Series: Melbourne.)

van Rees, H., Papst, W.A., McDougal, K., and Boston, R. C. (1985). Trends in vegetation cover in the grassland community on the Bogong High Plains, Victoria. *Aust. Rangelands. J.* 7: 93-98

Williams, R.J. (1990). Cattle grazing within subalpine heathland and grassland communities on the Bogong High Plains: disturbance, regeneration and the shrub-grass balance. In: *Proceedings of the Ecological Society of Australia*, Vol 16.

Wimbush, D.J., and Costin, A.B. (1979a). Trends in vegetation at Kosciusko, I: grazing trials in the sub-alpine zone. *Aust. J. Bot.* 27:741-787

Wimbush, D.J., and Costin, A.B. (1979b). Trends in vegetation at Kosciusko, II: sub-alpine range transects, 1959-1978. *Aust. J. Bot.* 27: 789-831

## Recreation

Department of Conservation, Forests and Lands (1989). Victorian Fishing Guide.

(Victorian Government Printing Office: Melbourne.)

## Tracks

Barnett, J.L., How, R.A., Humphreys, W.F. (1978). The use of habitat components by small mammals in eastern Australia. In: *Australian Journal of Ecology* (3) pp 277-85.

Chittleborough, D.J. (1986). Erosion and Pollution. In: Russell J.S., and Isbell R.F. eds. (1986). Australian Soils - the human impact. (University of Queensland Press: Brisbane.)

Lunney, D., Triggs, B., Eby, P., and Ashby, E. (1990). Analysis of scats of dogs *Canis familiaris* and foxes *Vulpes vulpes* (Canidae:Carnivora) in coastal forests near Bega, New South Wales. *Aust. Wildl. Res.* 17: 61-8

O'Shaughnessy, P. (1986). Melbourne and Metropolitan Board of Works Catchment Management Policies - A history and analysis of their development; Centre for Resource and Environmental Studies Working Paper 1986/28. (Australian National University: Canberra.)

Oxley, D.J., Fenton, M.B., and Carmody, G.R. (1974). The effects of roads on populations of small mammals. *J. App.Ecol.* 11:51-9.

Taylor, R.J., Bryant, S.L., Pemberton, D., and Norton, T.W. (1985). Mammals of the upper Henty River region, western Tasmania. *Pap. Proc. R. Soc. Tasmania* 119:7-14.

Weste, G. (1977). Future forests - to be or not to be. *Victoria's Resources* 19:26-7.



## Appendix I

### LIST OF SUBMISSIONS

#### Appendix I(a): Submissions from interest groups and other organisations

Organisation	Division/branch	Submission number
<b>STATE GOVERNMENT DEPARTMENTS</b>		
DEPT INDUSTRY & ECONOMIC PLANNING	MINERALS GROUP	1-351
DEPT OF CONSERVATION & ENVIRONMENT	LAND PROTECTION ADVISORY COMMITTEE	1- 90
DEPT OF CONSERVATION & ENVIRONMENT	FRESHWATER FISH MANAGEMENT BRANCH	1-320
DEPT OF CONSERVATION & ENVIRONMENT	WATER ENVIRONMENT BRANCH	1-343
DEPT OF CONSERVATION & ENVIRONMENT	OFFICE OF THE DIRECTOR-GENERAL	1-459
DEPT OF PROPERTY AND SERVICES	DIVISION OF SURVEY AND MAPPING	1-305
MELB AND METRO BOARD OF WORKS		1-442
PUBLIC TRANSPORT CORPORATION		1-232
RURAL WATER COMMISSION OF VICTORIA		1-206
STATE ELECTRICITY COMMISSION OF VIC		1-284
VICTORIAN TOURISM COMMISSION		1-539
<b>MUNICIPAL COUNCILS</b>		
CITY OF STAWELL		1-107
RURAL CITY OF WODONGA		1- 80
SHIRE OF ARAPILES		1-349
SHIRE OF AVON		1-165
SHIRE OF BAIRNSDALE		1-465
SHIRE OF DIMBOOLA		1-214
SHIRE OF KANIVA		1-199
SHIRE OF KARKAROOC		1-163
SHIRE OF KERANG		1-108
SHIRE OF KOWREE		1-147
SHIRE OF LOWAN		1-202
SHIRE OF MORWELL		1-534
SHIRE OF ORBOST		1-532
SHIRE OF ROCHESTER		1- 4
SHIRE OF ROSEDALE		1- 2
SHIRE OF TAMBO		1-257
SHIRE OF TUMBARUMBA		1-591
SHIRE OF UPPER MURRAY		1-535
SHIRE OF WANGARATTA		1-180
<b>ACADEMIC INSTITUTIONS</b>		
COMMUNITY EDUCATION CENTRE		1-396
GRAD SCHOOL ENVIRONMENTAL SCIENCE	DEPT GEOG & ENVIRONMENTAL SCIENCE	1-462
TRARALGON HIGH SCHOOL		1-350
<b>CONSERVATION GROUPS</b>		
AUSTRALIAN CONSERVATION FOUNDATION	SUNRAYSIA/MALLEE BRANCH	1-212
AUSTRALIAN CONSERVATION FOUNDATION		1-593
COLONG FOUNDATION FOR WILDERNESS		1-217
CONSERVATION COUNCIL OF VICTORIA		1-537
EAST GIPPSLAND COALITION		1-344
ENVIRONMENTALLY RECYCLED THEATRE		1-368
LATROBE VALLEY FIELD NATURALISTS		1-231
MELBOURNE EARTH FIRST		1-251
STH GIPPSLAND CONSERVATION SOCIETY		1-437



## Appendix I(a) (continued)

Organisation	Division/branch	Submission number
<b>Conservation Groups (continued)</b>		
TOTAL ENVIRONMENT CENTRE INC		1-278
VICTORIAN NATIONAL PARKS ASSOC		1-340
WARBY RANGE PROTECTION SOCIETY		1-240
WILDERNESS SOCIETY	DIAMOND VALLEY BRANCH	1-168
WILDERNESS SOCIETY	ILLAWARRA BRANCH	1-290
WILDERNESS SOCIETY	PENINSULA BRANCH	1-309
WILDERNESS SOCIETY	MAROONDAH BRANCH	1-312
WILDERNESS SOCIETY		1-352
<b>INDUSTRY GROUPS</b>		
APM FORESTS PTY LTD	GIPPSLAND OFFICE	1-331
BRUTHEN SAWMILLING COMPANY PTY LTD		1-531
FREDK.LADNER PTY LTD		1-330
GIPPSLAND PAPER PULP PTY LTD		1-304
MACQUARIE RESOURCES LTD		1-415
MARBUT PTY LTD		1-345
MARBUT-GUNNERSEN PTY LTD		1-463
SMITH BROS TIMBER PTY LTD		1-334
FRED HUNT & PARTNERS		1-321
TIMBER TOWNS ASSOC		1-335
VIC ASSOC OF FOREST INDUSTRIES		1-333
VICTORIAN APIARISTS ASSOCIATION INC		1-439
VICTORIAN CHAMBER OF MINES INC		1-301
VICTORIAN FARMERS FEDERATION	BONANG BRANCH	1-444
WANNON CONSERVATION SOCIETY		1-530
WESTERN MINING CORPORATION LIMITED		1-234
<b>RECREATIONAL GROUPS</b>		
AUST MOTORCYCLE TRAIL RIDERS ASSOC	AMTRA WILDERNESS SUB COMMITTEE	1-242
AUSTRALIAN DEER ASSOCIATION	VICTORIAN STATE EXECUTIVE	1-303
AUSTRALIAN NATIONAL 4WD COUNCIL		1-287
AUSTRALIAN TRAIL HORSE RIDERS ASSOC	VICTORIA BRANCH	1-397
BIRD OBSERVERS CLUB OF AUSTRALIA	BIRD OBSERVERS CLUB OF VICTORIA	1-216
COUNCIL OF VIC FLY FISHING CLUBS		1-238
THE MAN FROM SNOWY RIVER - COUNTRY HORSERIDERS' ASSOC		1-347
GOULBURN VALLEY 4WD CLUB INC		1-394
HIGH COUNTRY HORSE RIDERS		1-319
JACKAROO CLUB OF AUSTRALIA	VICTORIA BRANCH INC	1-286
LOCKSLEY BUSHWALKING CLUB INC.		1-213
MELBOURNE BUSHWALKERS		1-203
PAJERO 4WD CLUB OF VICTORIA		1-429
PROSPECTORS & MINERS ASSOC OF VIC		1-528
PROSPECTORS & MINERS ASSOC OF VIC	GIPPSLAND BRANCH	1-441
PUBLIC LAND COUNCIL OF VICTORIA		1-250
RANGE ROVER CLUB OF AUSTRALIA	VICTORIA BRANCH (INC.)	1-196
THE VIC MOUNTAIN TRAMPING CLUB		1-354
UPPER MURRAY PONY CLUB		1-430
VICTORIAN ASSOC FOUR WHEEL DRIVE CLUBS		1-235
VICTORIAN AMATEUR CANOE ASSOCIATION	TOURING COMMITTEE	1-395
VICTORIAN FIELD & GAME ASSOCIATION		1-261
VICTORIAN PISCATORIAL COUNCIL		1-428
WARRNAMBOOL WALKERS INC		1-324
YARRA VALLEY 4WD CLUB INC		1-408



## Appendix I(a) (continued)

Organisation	Division/branch	Submission number
<b>OTHER INTEREST GROUPS</b>		
CONFIDENTIAL		1-414
NO NAME SUPPLIED		1-181
CONGREGATION OF THE MISSION OF VINCENTIAN		1-218
FATHERS AND BROTHERS		
EDWARD STREET FILMS		1- 96
DEDDICK VALLEY ISOLATED WOMENS GROUP		1-243
FOREST PROTECTION SOCIETY	CENTRAL GIPPSLAND BRANCH	1-336
KEYSBOROUGH PRIMARY SCHOOL		1-461
KHANCOBAN TRAIL RIDES		1-341
PIGICK RURAL FIRE BRIGADE		1-229
SE PENINSULA RESIDENTS ASSOC		1-436
SUNSET 4WD TOURS		1-425
WILD PUBLICATIONS PTY LTD		1-285

## Appendix I(b): Submissions from individuals

Name	Submission number	Name	Submission number
<b>INDIVIDUALS</b>			
ALBERT	1-205	BILNEY	1- 15
ALBERT	1-379	BLACKWELL	1- 38
ALDRED	1-526	BLAKE	1-135
ALESSI	1-510	BLATTNER	1-464
ALEXANDER	1-122	BLUNDEN	1-440
ALI	1- 49	BOHNER	1-131
ALLEN	1- 10	BORJANOVIC	1- 50
ALLEN	1-316	BORRIE	1-453
ANDREWS	1-483	BOURKE	1-220
ANDREWS	1-577	BOYCE	1-288
ANICH	1-143	BOYD	1-129
ARCHER	1-113	BOYHAN	1- 36
ARMSTRONG	1-262	BRADWELL	1- 64
ARUNDELL	1- 26	BRANN & ROUNTREE	1-434
ASHBY	1-339	BRESNAN	1-529
AVERILL ET AL	1-156	BRIDGER	1-555
BADDELEY	1- 97	BRINK	1-133
BAILEY	1- 41	BROOKS	1-405
BAKER	1- 56	BROWN	1- 77
BALL	1-115	BROWN	1-145
BALTVILKS	1-353	BRUTON	1-136
BARNETT	1-127	BUCKLAND	1- 83
BARR	1- 37	BUCKLEY	1-106
BARROS	1-267	BURGESS	1-592
BATHGETE	1-533	BURKE	1-322
BAXTER	1-299	BURTON	1-423
BELL	1-522	BYTEWSKI	1- 98
BELL	1-523	CALDWELL	1-502
BENZ	1- 25	CAMERON	1- 84
BEST	1-124	CAMPBELL	1-273
BEURKER	1-547	CAMPBELL	1-513
BIBBY	1-470	CARD	1-412



## Appendix I(b) (continued)

Name	Submission number	Name	Submission number
CAREY	1-153	FELL	1-225
CARLYLE	1-227	FELLOWS	1-189
CARMICHAEL	1-506	FERREIRA	1- 31
CARTER	1-552	FINLAYSON	1- 1
CARMICHAEL	1-506	FINNIE	1-191
CARTER	1-552	FISHER	1-265
CATOGGIO	1-193	FISHER	1-508
CHRISTENSEN	1-294	FISHPOOL	1-162
CHARLESWORTH	1-155	FOLEY	1-560
CHINNAPPAN	1-184	FORAN	1-407
CIPETIC	1- 21	FOWLER	1- 45
CLARK	1-472	FRANK	1- 5
COLEMAN	1-381	FRANKEL	1-382
COLEMAN	1-524	FRANKLIN	1-230
COLLINS	1-289	FRASER	1-454
COMINS	1-443	FRAWR	1- 28
CONNELLY	1-187	FRIEDRICHSEN	1-256
CORBETT	1-475	FRY	1-208
CRISMANI	1-200	FRY	1-277
CROSS	1-219	FULLER	1- 12
CULLIN	1-197	GALE	1- 63
CURL	1-427	GARDINER	1- 60
CURTIS	1-228	GARDNER	1-456
DAVIES	1-195	GARGETT	1-511
DAVIS	1-245	GARTON	1-271
DAVISON	1-489	GIBBONS	1- 67
DAWSON	1-422	GIBBONS	1- 69
DAY	1-401	GIBSON	1-574
DAY	1-556	GIBSON	1-589
DAY	1-572	GILLSON	1-120
DAY	1-573	GILMARTIN	1-313
DEAN	1-161	GILMOUR	1-355
DEERING	1-175	GLADSBY	1- 32
DENT	1-563	GLADSTONE	1-167
DERGALZ	1- 52	GLANFIELD	1- 68
DESZCZ	1- 11	GLOGER	1-538
DEWAR	1-166	GLOGHEGAN	1-503
DISTON	1-578	GOEGAN	1-125
DODD	1- 22	GOODWIN	1- 30
DOERY	1-318	GORE	1-164
DONOGHUE	1-123	GRAHAM	1-518
DONOVAN	1-300	GRAINGER	1-246
DOURCE'	1-110	GRAVOLIN	1-406
DUFFIELD	1-400	GRECH	1-469
DUKE	1-159	GRIBBLE	1- 75
DUNN	1-323	GUY	1-492
DUNT	1-295	HAGEN	1-134
DURRANT	1-170	HAIBLEN	1-178
DUTTON	1-337	HALLORAN	1-255
EAST	1-346	HANLEY	1-190
EATON	1-500	HARE	1-248
EGRI	1- 62	HARE	1-249
ELDRIDGE	1-431	HARKER	1-148
ELLIS	1-488	HARMELING	1-542
FALCONER	1-100	HARRIS	1-279
FALKINGHAM	1-102	HARRIS	1-410
FALLACE	1- 53	HARRIS	1-571
FARRELLY	1-141	HARRIS	1-575



## Appendix I(b) (continued)

Name	Submission number	Name	Submission number
HARRIS	1-585	KOCH	1-254
HARRISON	1-236	KOCUR	1- 16
HARTAN	1-280	KOWALSKI	1-445
HARVEY	1-169	KRUGER	1-310
HAUCK	1-371	KURIC	1- 23
HAYES	1-211	KURIC	1- 35
HAYWOOD	1-369	LANDER	1-536
HAYWORTH	1-274	LARSEN	1-466
HELD	1-112	LARSEN	1-527
HENDERSON	1-306	LAUDANI	1-471
HERBERT	1- 55	LAUDANI	1-484
HERRON	1-498	LAW	1-177
HESKETH	1-325	LAWRENSON	1-514
HILL	1-413	LAYH	1-373
HILTON	1-171	LEDSON	1-327
HOCKING	1-356	LEE	1- 40
HOLDSWORTH	1-111	LEE	1- 47
HOMAN	1-215	LEHMANN	1-266
HOWARTH	1-366	LENARCIC	1- 79
HOWDEN	1-553	LEONE	1- 57
HUDEC	1- 17	LEWIS	1-520
HULLAND	1-384	EYDON	1- 93
HUMPHREYS	1-173	LINDSEY	1- 59
HUNT	1- 42	LIPSHUT	1-104
HUNT	1- 44	LOCK	1-302
HUNTER	1-584	LOFTUS HILLS	1- 89
INGLIN	1- 86	LOPES	1-281
ISER	1- 87	LOVASS	1- 9
IZZARD	1- 46	LYFORD	1-481
JABOOR	1-421	LYNCH	1-568
JACKSON	1-226	MACFARLANE	1-455
JACKSON	1-385	MACWHIRTER	1-458
JACOBS	1-210	MANDERS	1-293
JAIMINE	1-370	MANNING	1-166
JAPPIE ET AL	1- 18	MARWICK	1-485
JENKINS	1-149	MATHEWS	1-291
JERVIS	1-358	MAYNE	1- 58
JOHNSON	1-101	MENNEN	1- 7
JOHNSON	1-103	MERRITT	1-139
JOHNSON	1-142	METCALF	1-450
JOHNSTON	1- 82	MICHELL	1-411
JONES	1-364	MICHENER	1-298
JONES	1- 66	MILLER	1- 91
JONES	1-264	MILLER	1-244
JONES	1-540	MILLIS	1-140
JORDAN	1-158	MILNE	1-117
JUROWICZ	1- 8	MILNE	1-118
KEAM	1-328	MISKIN	1-590
KEELEY	1-116	MITCHELL	1-176
KEEN	1- 29	MOELLER	1- 39
KEENAN	1-521	MONK	1-150
KELLETT	1-582	MOOR	1-505
KENNISON	1-559	MOORE	1-221
KENT	1-554	MORAVEC	1-296
KERR	1-365	MORES	1-588
KILNER	1-583	MORGAN	1-551
KING	1- 94	MORIS	1-380
KINSELEY	1-467	MORRIS	1-114
KLOYD	1-263	MORRIS	1-121
KLYN	1- 33	MOULDEN	1- 70



## Appendix I(b) (continued)

Name	Submission number	Name	Submission number
MORTON	1-157	REED	1-361
MOSCROP	1-132	RHIND	1-594
MOZE	1- 54	RICHARDSON	1-137
MUIR	1-198	RICHARDSON	1-387
MUSCAT	1-375	ROBB	1-308
MACMAHON	1-268	ROBERTSON	1-404
MCDONALD	1-185	ROBERTSON	1-541
MCDONALD	1-186	ROBERTSON	1-543
McGLADDERY	1-419	ROBERTSON	1-544
McGLASHAN	1-504	RODDA	1-564
McGRATH	1-570	RODDA	1-565
McINTOSH	1-146	RODDA	1-566
McINTOSH	1-241	ROSMALEN	1-579
McINTYRE	1-417	ROWE	1-141
McLEAN ET AL	1-388	RUDD	1-399
McNAUGHT	1-398	RUNDELL	1- 43
McNEAIR	1-348	SALTER	1-223
NAME ILLEGIBLE	1-561	SANDERS	1-172
NEVEN	1-237	SCANTLEBURY	1- 71
NEVEN	1-276	SCHAETZEL	1- 61
NEWTON	1-473	SCOTT	1-152
NEWTON	1-476	SCOTT	1-311
NEWTON	1-479	SCOTT	1-418
NEWTON	1-480	SCULTHARP	1-314
NICHOLLS	1-367	SEIP	1- 20
NICHOLSON	1-222	SELIGMAN	1-259
NICOLL	1-297	SEMMENS	1-275
NIELSEN	1-269	SEMLER	1- 51
NO NAME SUPPLIED	1-362	SERLE	1-194
NORBORIC	1-512	SHARMAN	1-497
NORTON	1-587	SHARMAN	1-499
O'CONNOR	1-433	SHARP	1-557
O'MAY	1-342	SHAW	1-260
O'SULLIVAN	1-392	SHERIDAN	1-253
OFFERMANN	1-495	SHOOKAL	1-105
OFFERMANN	1-496	SHOGREN	1-372
OFFOR ET AL	1-435	SICBERT	1-486
OKUNOWSKI	1-507	SIMMONS	1- 76
OVENDEN	1- 85	SIMPSON	1-377
PASCOE	1-383	SINGH	1-409
PASSARIN	1- 14	SLATER	1-509
PENMAN	1-326	SLEE	1-209
PERUS	1-490	SLEEP	1- 3
PETERSEN	1-338	SMITH	1- 72
PHILLIPS	1-478	SMITH	1-138
PICCOLI	1- 74	SMITH	1-179
PICKET	1-376	SMITH	1-204
PICONE	1-386	SMITH	1-252
PIRRELL	1-357	SMITH	1-329
PISCOPO	1-494	SMITH	1-332
POVEY	1-307	SMITH	1-516
POYAS	1-247	SMITH	1-517
PREFOL	1- 48	SMITHERS	1- 88
PURDAM	1-315	STANBROUGH	1-119
RAWLINGS	1-569	START	1-549
RAWLINSON	1-562	STEVENSON	1-438
RECHTER	1-151	STEWART	1- 6
REDMOND	1-188		



## Appendix I(b) (continued)

Name	Submission number	Name	Submission number
STEWART	1-424	WALCH	1-457
STICHT	1-477	WALKER	1- 34
STONE	1- 81	WALLACE	1-446
STOREY	1-144	WALLACE	1-447
STRATHEARN	1- 78	WALLACE	1-448
STUART	1-182	WALLACE	1-449
SUMMERS	1-576	WALLACE-KOWALSKI	1-451
SUMMERS	1-558	WALTER	1-545
SUSCOMBE	1-501	WALTER	1-580
SUTHERLAND	1-272	WALTERS	1-283
SUTHERLAND	1-292	WARFE	1-420
SVENSSON	1- 24	WASHBOURNE	1- 13
TARDOF	1-160	WEARM	1-468
TAYLOR	1-233	WELLAND	1-378
TERRY	1-183	WELLS	1-515
THOMAS	1-432	WESTON	1-258
THOMAS	1-482	WHITEHEAD	1-474
THOMAS	1-550	WHYTE	1-359
THWAITES	1- 92	WILLIAMS	1-546
TIMMA	1-130	WILLIAMS	1-548
TIMMS	1-360	WILLS-JOHNSON	1-239
TOWERS	1-374	WILSON	1-224
TRAINOR	1-270	WINDRIDGE	1- 27
TRUDA	1-128	WINTER	1-207
TUIT & FISHER	1-126	WOOD	1-452
TURNER	1-581	WOODROFFE	1-586
TURNIDGE	1-426	WOODS	1-402
TYLER	1-416	WOODWARD	1-487
ULLOA	1-174	WOODWARD	1-491
VAN DE VREEDE	1- 99	WOOLLACOST	1-317
VAN DEN HEUVEL	1-525	WOOLMORE	1- 73
VAN DER ZWEEP	1-567	WRIGHT	1-282
VAN GEMERT	1-403	WRIGHT	1-363
VAN HUET	1-109	WRIGHT ET AL	1-192
VOIGT	1- 19	WROBEL	1-493
VOLTZ	1-393	YETMAN	1-390
WADSLEY	1-154	YETMAN	1-201
WAEFTER	1- 95	YETMAN	1-391
WALCH	1-389	ZINSERLIUG	1-519



## Appendix II

### NATIONAL AND INTERNATIONAL DEFINITIONS AND CRITERIA

#### CONCOM Guidelines

Guidelines for the reservation and management of wilderness areas in Australia have been prepared by the Council of Nature Conservation Ministers in an attempt to establish a consistent, national approach to such areas. CONCOM is composed of all Commonwealth, State and Territory Ministers having responsibility for national parks and wildlife. The guidelines were prepared by a working group of CONCOM in 1986 and reflect the input of CONCOM members, government organisations, public interest groups and individuals.

The guidelines define a wilderness area as 'an area designated under legislation and managed to maintain its high wilderness quality', with the term wilderness quality referring to 'the extent to which land or water is remote from and substantially undisturbed by the influence of modern technological society'.

The guidelines emphasise that wilderness areas are established to provide opportunities for visitors to enjoy solitude and inspiration in natural surroundings, and that such areas have significant value for nature conservation, as well as for recreation. The guidelines also note that wilderness areas may be declared in their own right, or may be large zones within national parks or other reserves.

The guidelines propose the following key criteria for the identification and evaluation of land having wilderness area potential:

- (a) a large area, preferably in excess of 25 000 ha, where visitors may experience remoteness from roads and other facilities; and
- (b) an area with minimal evidence of alteration by modern technological society.

They also note that shape of an area and any adjacent land use may be other important elements to be taken into consideration.

The guidelines state that the primary objective of management should be to protect wilderness quality, both physical and social, and that use should be so regulated as to minimise impact and maintain the quality of both the environment and the wilderness experience.

The general management principles include the following:

- (i) Access for recreation be by non-mechanical methods and unaided by animals.
- (ii) Access by mechanical means and transport animals be permitted for essential management operations where no practical alternative means of access is available.
- (iii) The impact of self-reliant recreation on the ecological process and the effect of interactions between visitors and the environment be monitored, as should any commercial or group activities.
- (iv) No permanent structures or developments should be retained, except where of historic or archaeological value or where necessary to protect the environment.
- (v) Research should be restricted to essential work which cannot be carried out elsewhere.
- (vi) An awareness of wilderness values be encouraged among visitors.
- (vii) Fire management policies take into account the wilderness management principles, as well as available ecological knowledge, fire histories, recreational values, and the need to protect adjacent communities and property.

The guideline document draws a number of specific conclusions about the desirability of consistent approaches to wilderness across



Australia. The conclusions also included statements to the effect that:

- (a) all agencies consider an active program of wilderness area identification and reservation
- (b) inventories based on an assessment of areas both within and external to existing systems of protected areas be compiled, and consistent survey approaches be used
- (c) wilderness areas be given at least the same security of tenure as national parks, whether they be discrete wilderness areas or zones within reserved national parks, and
- (d) where an area is designated as a wilderness area, resource exploration and exploitation should not be permitted.

### **IUCN Classification System**

The major international body with a charter for world-wide consistency on the designation and management of protected areas is the United Nations affiliated International Union for Conservation of Nature and Natural Resources (IUCN) through its Commission on National Parks and Protected Areas (CNPPA). The Commission has a global network of 335 members in 126 countries.

Prior to 1978, the Commission (then known as the International Commission on National Parks) had a very specific focus on national parks. Since 1978, it has assumed a broader perspective and is now concerned with a range of protected area categories. For many years these categories reflected those documented in the IUCN's paper 'Categories, Objectives and Criteria for Protected Areas' (1978). However, none of the categories in this paper specifically provided for wilderness protection.

In 1984, at the Madrid General Assembly of IUCN, a resolution was passed requesting that the inclusion of wilderness areas in its protected areas category be examined. In part, this was a response to the fact that many such designated areas were not being within the normal protected area network, notably in the U.S.A. As a result of this concern, and

others, a comprehensive revision of categories was undertaken. As was discussed in the Descriptive Report, a new paper 'Protected Areas - A Classification System' was prepared and adopted at the January 1988 meeting of the CNPPA in Costa Rica. Council has been recently informed that the classification system outlined in the 1988 paper has since been superseded.

The IUCN's new classification system, as unanimously adopted by the CNPPA in Perth in November 1990, is composed of five categories of protection areas: Scientific Reserves and Wilderness Areas; National Parks and Equivalent Reserves; Natural Monuments; Habitat and Wildlife Management Areas; and Protected Landscapes/Seascapes.

Wilderness areas are considered to be areas largely free of human intervention; available primarily for scientific research, environmental monitoring and non-mechanised non-disruptive forms of ecotourism.

Objectives and criteria for selection and management are defined:

#### **'Objectives**

Wilderness areas incorporate all of the objectives of Scientific Reserves. Wilderness is an enduring natural area protected by legislation and of sufficient size to protect the pristine natural environment which serves physical and spiritual well-being. Wilderness is an area where little or no persistent evidence of human occupation is permitted, so that natural processes will take place largely unaffected by human intervention.

Wilderness areas stress non-mechanised access. As pristine natural areas, they should be established to ensure that future generations will have an opportunity to seek understanding in largely undisturbed areas.

#### **Criteria for Selection and Management**

These areas possess some outstanding and representative ecosystems, features and/or species of flora and fauna of scientific importance. They often contain fragile ecosystems or life forms, areas of important biological or geological diversity, or are of particular importance to the conservation of



genetic resources. Size is determined by the area required to ensure the integrity of the ecosystem and to accomplish the management objectives which provide for its protection.

Control and ownership should, in most cases, be by governments, foundations, universities or institutions which have a research or conservation function. Exceptions may be made where adequate safeguards and controls relating to long-term protection are ensured.'

In addition, wilderness designations are also considered an appropriate element in the national parks and equivalent reserves category:

'National parks, as large conservation areas, generally contain a range of functions, from scientific reserves and wilderness to the provision of recreation/tourism facilities. Generally these are delineated in management plans by zoning systems.'



### Appendix III

## SIZE AND SHAPE AS INDICATORS OF ECOLOGICAL VIABILITY

The terms of reference for the Wilderness Special Investigation, require the consideration of ecological viability as an attribute of wilderness; and also the need to have regard to wilderness values which include:

- \* preservation and maintenance of ecological processes and natural gene pools
- \* the opportunity for native species and ecosystems to exist without human interference.

Since a key attribute for assessing wilderness is the biophysical naturalness of the land, it is appropriate that any land that is set aside specifically for the protection of wilderness should ideally be capable of maintaining its natural processes in perpetuity. Naturalness can only be maintained if each species of plant and animal present is part of a viable population; viable populations can only be supported by suitable habitat of sufficient size.

A large area of natural land also has a higher probability of recovery in the event of a catastrophe such as wildfire. In such a case, there is a better chance of some land remaining undamaged to provide source populations for re-colonization. But even reserves that are completely natural within their boundaries, and are of adequate size, can have their naturalness threatened by the effects of surrounding artificially modified areas (for example, through the introduction of exotic plants, animals, and diseases; increased exposure to wind, sun, or chemicals). Therefore, when defining wilderness boundaries, the effects of edges and reserve shape must be taken into account.

In addition, as most areas in Victoria have, or have had, one or more artificial disturbances (such as unnatural fire regimes, grazing by stock, or establishment of tracks), it is necessary to consider the impact of these artificial disturbances on ecological viability and ascertain what the prospects are for

recovery once the disturbance is removed. However, these additional matters are not covered in this appendix but have been discussed in Chapter C.

### Size

In Australia, there have been no studies undertaken which specifically estimate the minimum area of land that can sustain its completely natural condition in the long term. However, Main and Yadav (1971) examined the offshore islands of Western Australia and concluded that an undisturbed area of at least the size of Barrow Island (20 250 ha) was necessary to retain the flora and fauna representative of a region.

Nevertheless, even Barrow Island does not carry the largest herbivore of the region (red kangaroo *Macropus rufus*). There have been other studies directed at estimating the contiguous area necessary to preserve a regional assemblage of particular groups of animals. For example, Kitchener *et al.* (1980; 1982) compared the sizes of existing reserves in the Western Australian wheatbelt with the number of species present. They concluded that retention of viable populations of all the mammal species required more than 40 000 ha; and for birds, 30 000 to 94 000 ha was needed to preserve 90 to 100% respectively of the resident species.

An alternative approach for arriving at the size of a self-sustaining natural area is to estimate the area required for the long-term survival of a single species of animal which has a naturally low population density such as 'top of the food chain' predators, large-bodied animals, or other species with specialised or demanding habits. The presence of top predators is particularly important as an indicator of the health and intactness of the ecosystem to which they belong. Furthermore, their loss can lead to major and sequential disruptions throughout the system such as an increase in the herbivores on which they prey and consequent overgrazing, the loss of certain plant species, and the loss of animals which



depend on those plants. If the size of a reserve could be based on knowledge of the requirements of a key species with a naturally low population density, then it could be assumed that the habitat requirements of the other smaller, less demanding animal species in the ecosystem will also be met. The focus on animals is based on the presumption that populations of large animals (the consumers) need much greater areas to survive than do viable populations of the plants (the primary producers) of the ecosystem. Of course, any estimate of the area required by a species, whether plant or animal, assumes that all the nominated area is suitable habitat for the species in question.

The area required by a key species may be calculated by estimating the area required exclusively by one individual of the species and multiplying this by the minimum viable population size. Early Australian work tended to choose arbitrary population sizes; for example some workers regarded 5000 animals as the minimum population necessary and produced estimates of minimum areas of habitat that ranged from about 6000 ha (for a small mammal such as the greater glider *Petauroides volans*) to 50 000 ha (for the eastern grey kangaroo *Macropus giganteus* in humid areas of south-eastern Australia), or even 500 000 ha (for red kangaroos *Macropus rufus* in an arid region).

More recently, geneticists have concluded that for short-term survival an effective population size of at least 50 is necessary to keep inbreeding below about one percent. However, only an effective population size of about 500 is considered sufficiently large for long-term survival; that is, 500 individuals that are capable of interbreeding. Since many species have substantial numbers of non-breeding individuals in their populations, in reality, this may mean the actual population has to be much larger than 500 (perhaps even as large as the 5000 proposed by earlier workers). A 'sufficiently large population' is one that has enough natural genetic variability so that it can continue to evolve and respond to gradual environmental changes, and can avoid a range of serious genetic problems such as inbreeding and genetic drift.

The space occupied by a population of this number varies according to the size and habits of a particular species, the presence or

absence of competitors, and the suitability of the habitat available. A 'top of the food chain' predator in Victoria such as the powerful owl *Ninox strenua* needs about 800 to 1000 ha of suitable feeding area per pair. A population of just 500 would require 200 000 to 250 000 ha. For the past 3000 to 8000 years the largest indigenous, terrestrial predator in Australia has been the dingo *Canis familiaris*. Dingoes are important to the balance of a natural area, being the top predator of a food chain long adapted to their presence. They require about 900 to 1400 ha per breeding pair in coastal New South Wales, 1400 to 2000 ha in sub-alpine and alpine areas, and up to 3000 ha in arid central Australia. A population of only 500 dingoes might therefore require 225 000 to 750 000 ha. In North America, a larger mammalian carnivore such as the wolf may need as much as 12 million ha to support an effective population size of 500. In Victoria, we probably do not have predator species that are as large and demanding of space as the wolf, although predators and large herbivores in arid and less productive areas like the mallee probably occupy a greater area than they do in the eastern forests.

### Edges

Ecologically, an edge is the border zone between two different kinds of habitat (for example, between grassland and forest). Today, the term is most often used to describe the boundary between natural and artificial landscapes. Boundaries of reserves, especially of forested reserves, frequently become edges because of a very different land-use in surrounding areas. Land surrounding reserves may be cleared for agriculture or disturbed during timber harvesting. Of the native species apparently adapted to edges, only some will find the vast scale of clearings created by humans suitable; and those species will certainly find no shortage of opportunities in today's landscape. Some other species are adapted to narrow zones beside relatively small-scale clearings (such as those caused naturally by trees falling, or by a landslide) and may not do well over the long term at the edges of large artificial clearings.

In the past, land managers regarded edges as beneficial to wildlife, but there are now known to be negative effects. While areas near edges can sometimes house a greater



diversity of species than would be otherwise be present in the habitats involved, it may be a different suite of more common species. This is clearly a negative effect for the species that are lost; and the species tend to be repeatedly disadvantaged in this way.

The effects of artificial edges have been best documented overseas, but there is every reason to suppose that similar results would be found in Australia. Artificial edges may function as ecological traps by giving some species appropriate cues that it is suitable habitat when in practice, it is a less satisfactory habitat than the natural edges to which those species are adapted. For example, many bird species which are initially attracted to edges suffer increased predation on their nests. Andren and Angelstram (1988) found that predation on forest-nesting birds was much higher in the 200 to 500 m of forest nearest to farm land. Other species such as chipmunks, squirrels and certain species of mice, avoid the edges of forest and will not venture near cleared areas such as agricultural land. Less well studied small Australian animals are probably similarly disadvantaged near edges. They may also be subject to unnaturally high predation at edges since many Australian and exotic predators such as dingoes, large goannas, and foxes hunt preferentially along edges and other discontinuities in the landscape. This apparent benefit to predators is at severe cost to the prey species, and the net result can be a severe and unnatural disruption of the whole local ecosystem.

A boundary of a natural area can act as a one way filter, where animals from some populations of the area can stray out or be lost; and the surrounding modified land provides few if any replacements of the same species back to the natural area. Over time, this loss of individuals can be significant to the population in the natural area. In natural areas where the boundary is large compared with the land contained within, there tends to be an unnaturally high density of 'generalist' animals which may overgraze, excessively trample, or otherwise outcompete the normal species occupying the natural area.

Boundaries between natural and highly modified landscapes are the main access into the natural land for exotic plant or animal pest species. The higher the ratio of boundary to enclosed area, the greater will be

the proportion of the total area that is likely to be inhabited by exotic species.

There are also damaging physical effects at unnatural edges, especially the edges between forests and extensively cleared land. Large, new clearings expose the adjacent forest to factors that it developed without, such as more sunlight, greater extremes of temperature, the drying and destructive effects of wind, fertilizer damage to indigenous plants, encouragement of exotic weeds, and pesticide damage to the invertebrate communities upon which most of the higher food chain depends. Indeed, while pesticides are often only partially effective in controlling many agricultural pests (which have developed a resistance), they are generally very effective against wild invertebrate populations which can be locally eliminated where subject to spray drift.

### Shape

Studies of island biogeography have led to some general design rules for the shape of reserves to best maintain ecological viability. Those rules particularly applicable to maintaining the naturalness and ecological viability of wilderness are as follows:

- \* The best shape of a reserve (especially where the perimeter abuts a modified landscape) is circular, since this minimizes the perimeter to area ratio.
- \* A single large reserve is better than a series of discrete smaller reserves of equal total area.
- \* If reserves have to be fragmented then the segments within a general locality should remain connected by substantial corridors of natural vegetation.

### References and Bibliography

- Andren, H. and Angelstram, P. (1988) Elevated predation rates as an edge effect in habitat islands: experimental evidence. *Ecology* 69:544-547
- Best, L. W. (1978) Dingo movements in central Australia. in proc. 'Australian vertebrate pest control conference, Canberra.'. (CSIRO: Melbourne.)



- Brown, A. M. (1983) Conservation genetics in Victoria. Fisheries and Wildlife, Victoria; Resources and Planning Branch Tech. Rep. Ser. No 1, Melbourne
- Catling, P. C. (1978) Dingo movements in south-east New South Wales. in proc. 'Australian vertebrate pest control conference, Canberra.' (CSIRO: Melbourne.)
- Diamond, J. M. and May, R.M. (1976) Island biogeography and the design of natural reserves. in 'Theoretical ecology. Principles and applications.' (Blackwell Scientific Publications: Oxford.)
- Eisenberg, J. F. (1980) The density and biomass of tropical mammals. in M. E. Soule and B. A. Wilcox (eds) 'Conservation biology. An evolutionary-ecological perspective.' (Sinauer Associates Inc.: Massachusetts.)
- Fleay, D. (1968) Nightwatchmen of bush and plain. (Jacaranda Press: Brisbane.)
- Franklin, I. R. (1980) Evolutionary change in small populations. in M. E. Soule and B. A. Wilcox (eds) 'Conservation biology. An evolutionary-ecological perspective.' (Sinauer Associates Inc.: Massachusetts.)
- Gates, J.E. and Gysel, L.W. (1978) Avian nest dispersion and fledging success in field forest ecotones. *Ecology* 59:871-883
- Gorman, M. (1979) Island ecology. Chapman and Hall, London
- Gullan, P. K. (1985) Foreword. in 'Weeds of forests, roadsides and gardens'. (Friends of Sherbrooke Forest and Department of Conservation, Forests and Lands: Melbourne.)
- IUCN (1980) World Conservation Strategy - living resource conservation for sustainable development. (International Union for the Conservation of Nature and Natural Resources: Morges.)
- Janzen, D. H. (1986) The external threat. in M. E. Soule (ed.) 'Conservation biology. The science of scarcity and diversity.' (Sinauer Associates Inc.: Massachusetts.)
- Kitchener, D. J., Chapman, A., Muir, B. G. and Palmer, M. (1980) The conservation value for mammals of reserves in the Western Australian wheatbelt. *Biological Conservation* 18:179-207
- Kitchener, D. J., Dell, J., Muir, B. G., and Palmer, M. (1982) Birds in Western Australian wheatbelt reserves - implications for conservation. *Biological Conservation* 22:127-163
- Lunney, D., Triggs, B., Eby, P. and Ashby, E. (1990) Analysis of scats of dogs *Canis familiaris* and foxes *Vulpes vulpes* (Canidae:Carnivora) in coastal forests near Bega, New South Wales. *Aust. Wildl. Res.* 17: 61-68
- Main, A. R. and Yadav, M. (1971) Conservation of macropods in reserves in Western Australia. *Biological Conservation* 3:123-133
- Newsome, A. E. (1983) Dingo. in R. Strahan (ed.) The Australian Museum complete book of Australian mammals. (Angus and Robertson: Melbourne.)
- Newsome, A. E., Catling, P. C. and Corbett, L. K. (1983) The feeding ecology of the dingo II. Dietary and numerical relationships with fluctuating prey populations in south-eastern Australia. *Aust. J. Ecol.* 8: 345-366
- Seebeck, J. H. (1976) The diet of the powerful owl *Ninox strenua* in Victoria. *Emu* 76:167-170
- Shaffer, M. L. (1981) Minimum population sizes for species conservation. *BioScience* 31:131-132
- Slatyer, R. O. (1975) Ecological reserves: size, structure and management. in E. Fenner (ed.) 'A national system of ecological reserves in Australia.' (Australian Academy of Science: Canberra.)
- Soule, M. E. (1980) Thresholds for survival: maintaining fitness and evolutionary potential. in M. E. Soule and B. A. Wilcox (eds) 'Conservation biology. An evolutionary-ecological perspective.' (Sinauer Associates Inc.: Massachusetts.)
- Theberge, J. B. (1989) Guidelines to drawing ecologically sound boundaries for national parks and nature reserves. *Environmental Management* 13:695-702



Tyndale-Biscoe, C. H. and Calaby, J. H. (1975) Eucalypt forests as refuge for wildlife. *Aust. For.* **38**:117-133

Usher, M. B. (1987) Effects of fragmentation on communities and populations: a review with applications to wildlife conservation. in D. A. Saunders, G. W. Arnold, A. A.

Burbidge and A. J. M. Hopkins (eds) 'Nature conservation: the role of remnants of native vegetation.' (Surrey Beatty and Sons: Sydney.)

Yahner, R.H. (1988) Changes in wildlife communities near edges. *Conservation Biology* **2**:333-339



## Appendix IV

### SUMMARY OF FINDINGS OF SOCIAL AND ECONOMIC ASSESSMENT REPORT

*The following is the Summary of the social and economic implications of the Candidate Areas from the report prepared by Econsult (Australia) Pty Ltd, titled: Wilderness Special Investigation; A Social and Economic Assessment of Candidate Wilderness Areas. Note that the findings relate to candidate areas not Council's proposed wilderness areas. A summary of the socio-economic implications of the proposed wilderness areas has been included in the Introduction.*

The contribution of the candidate areas to Statewide or regional production or activity is generally low, other than for the contribution that five candidate areas make to timber production. However, some individual enterprises involved in apicultural production, livestock production and commercial tours are reliant on parts of one or more candidate areas for a significant part of their income.

#### Apiculture

Apiculture production occurs in four candidate areas: two in the Sunset and two in the Big Desert. Their production is a minor but important part of Victoria's apiculture industry. About 3.3% of honey and about 4.4% of beeswax is produced from these areas. This contributes about \$103 000, or about 2.0% of the State's total value of production of honey and beeswax. Although the contribution these sites in the candidate areas make to State production is not large, they are very important to some individual enterprises, particularly the Big Desert sites which are used by apiarists who provide hives for pollination of almond groves. Loss of these sites and this source of income would reduce some apiarists income by around of 14%. In total, pollination services from the sites is in the order of \$132 000. In addition, unless this pollination service could be replaced by hives from other locations, production from the almond industry in Victoria would be reduced substantially. There are no other suitable locations in Victoria but there are potential locations in New South Wales. The cost of hives from New South Wales would be likely to be greater because they are further away.

#### Livestock production

Licensed grazing of livestock occurs in eight of the candidate areas.

Livestock production within these areas is not a significant component of State and regional production. Total cattle numbers grazed on the licensed grazing blocks encompassing the candidate areas represent about 0.2% of the State meat cattle population. The total contribution to stock production from the licensed grazing blocks would be in the order of \$400 000 to \$500 000 (the total value of production has not been apportioned between parts of grazing blocks within or outside the candidate areas - it relates to the total block).

Although the contribution that these licensed blocks make to State and regional production is small, the loss of grazing in these areas to individual enterprises would in most instances be significant. In only one case would it be negligible but in others there is firm evidence to suggest that it would cause major reductions in productivity to such an extent that the enterprise may no longer be viable.

#### Mining and Extractive Industries

In summary, access to public land for mineral exploration and production is an issue in only a small number of candidate areas, mainly because a large proportion of the land in candidate areas is currently within national parks, where no exploration is allowed, or in the case of petroleum the barriers to exploration are quite substantial.

No mineral or other extractive industry is currently taking place within any of the candidate areas. However, a number of exploration licences do cover parts of candidate areas in the Big Desert and areas in the Alps. These areas are considered highly prospective but given that there is no proven resource in any of these candidate areas, it is impossible to attribute a definite value to areas that may be excluded from mining.



For those areas considered prospective, the total gross output of a gold and base metals mining operation could be expected to range from \$200 to \$900 million dollars and for oil, a modest on-shore field could generate between \$5 million and \$55 million per annum. However, it is impossible to assign a probability of achieving this to any of the candidate areas.

With respect to industry concern about the continued reduction of public land from the area available for mineral exploration the actual amount of land which may be excluded is not high when compared to the total area of land available for exploration in Victoria.

### **Recreation**

The major findings relating to recreational use of candidate areas concern the ranking in terms of importance of candidate areas by recreation groups currently using candidate areas and estimates of visitation to candidate areas.

Visitation to candidate areas is small in State-wide terms. The candidate areas experiencing the highest levels of visitor days per annum (ranging from 3000 to 6000 visits/year) are: Upper Murray--Pilot, Wonnangatta, Macalister and Rodger--Bowen. Noticeably, these four candidate areas were ranked highly by a number of recreation groups. Other areas ranked highly were the Avon (bushwalking), Tingaringy (canoeing), Reedy Creek (horseriding), and Wilsons Promontory (bushwalking) candidate areas.

It appears that only deer hunters are relatively reliant upon candidate areas. However, for all activities one or more candidate areas provide the opportunity for high quality experience.

### **Timber**

Available volumes of timber are contained within eight candidate areas, of which three contain negligible levels. The net-present values of all grades of timber contained within the five respective candidate areas range from \$1.12 M in Wongungarra to \$4.54 M in Rodger--Bowen. The bulk of the total resource within candidate areas lies within the East Gippsland FMA and contributes approximately 6% of this FMA's overall sustainable yield per annum.

Most of the direct employment reliant upon timber resources within candidate areas also arises in East Gippsland. The estimated direct employment losses due to withdrawal of resource in candidate areas are in the range between 24 and 36 full-time equivalent jobs. Because of the regionalised nature of the potential impact of resource withdrawal, multiplier effects are likely to be reasonably high. Possible total employment losses are estimated to be in the range between 40 and 60 full-time positions.

### **Tourism**

Actual usage of candidate areas by commercial tour operators is relatively small, with the only sizable activity being tours, predominantly horse-riding safaris, utilising the Wonnangatta and Upper Murray candidate areas, and canoeing/rafting trips in the Rodger/Bowen candidate area along the Snowy River.

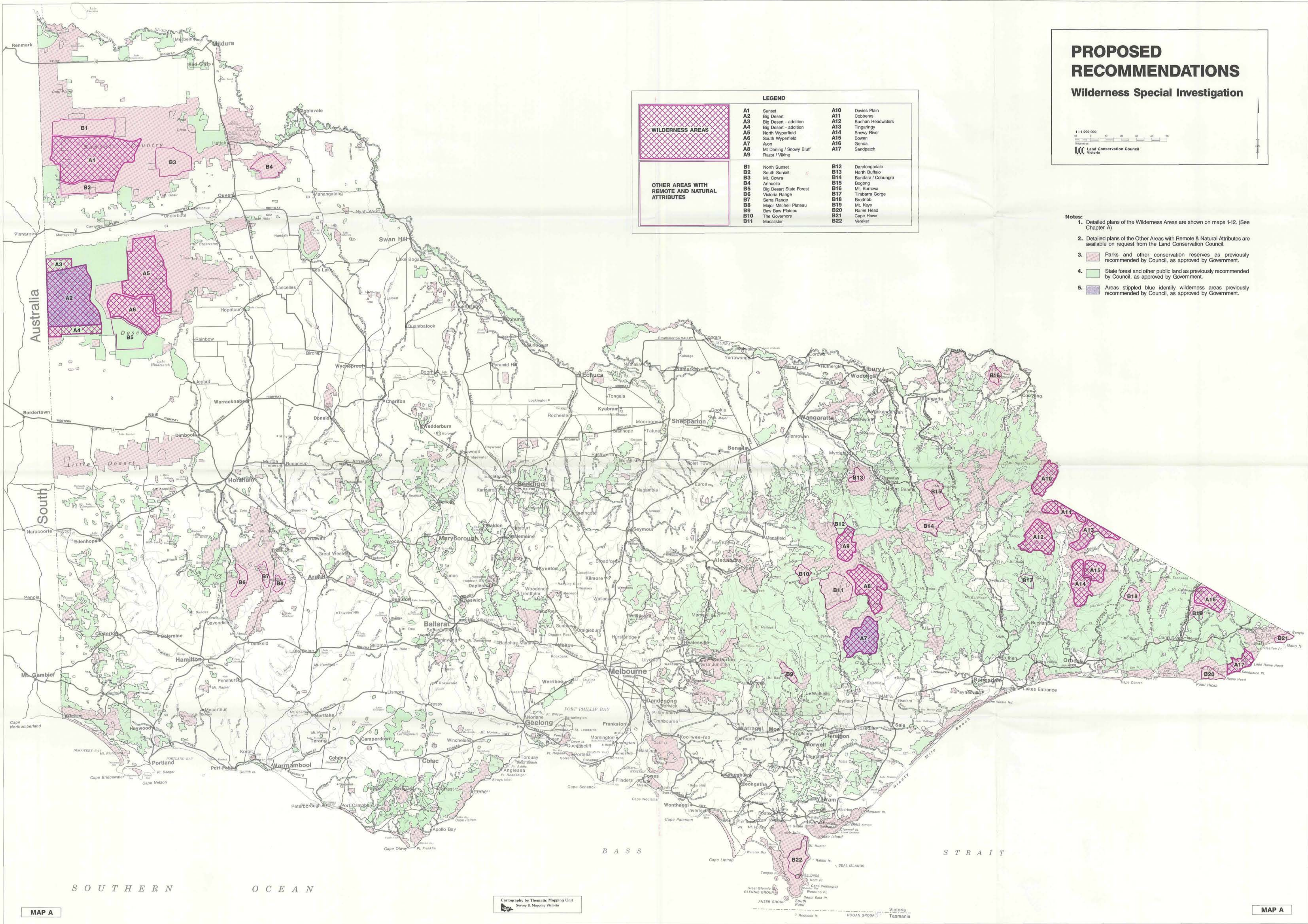
In summary, the actual confirmed usage of candidate areas by commercial tour operators is very small in state-wide terms. Denial of access to candidate areas would only impact upon most of the tour operators to a minor extent. In most cases, tour operators offer a range of other tours which do not use candidate areas. However, several tour operators currently using the three candidate areas (Wonnangatta, Upper Murray--Pilot, and Rodger--Bowen) would have to significantly revamp schedules, or in two cases, possibly close their operations.

### **Water Resources**

If candidate areas had additional land use restrictions imposed upon them, as might be expected under wilderness designation, it is likely that water quality will be protected. In areas where activities such as logging and grazing have been taking place, water quantity and quality may be improved.

However, in four candidate areas, there is some potential for water resource development. However, in all cases alternative sources of supply exist without major additional costs being incurred and the need for augmenting existing water supplies from these areas is limited.





# PROPOSED RECOMMENDATIONS

## Wilderness Special Investigation

1:1 000 000  
Land Conservation Council  
Victoria

LEGEND	
<b>WILDERNESS AREAS</b>	<b>A1</b> Sunset <b>A2</b> Big Desert <b>A3</b> Big Desert - addition <b>A4</b> Big Desert - addition <b>A5</b> North Wyperfield <b>A6</b> South Wyperfield <b>A7</b> Avon <b>A8</b> Mt Darling / Snowy Bluff <b>A9</b> Razor / Viking
<b>OTHER AREAS WITH REMOTE AND NATURAL ATTRIBUTES</b>	<b>B1</b> North Sunset <b>B2</b> South Sunset <b>B3</b> Mt. Cowra <b>B4</b> Annuello <b>B5</b> Big Desert State Forest <b>B6</b> Victoria Range <b>B7</b> Serra Range <b>B8</b> Major Mitchell Plateau <b>B9</b> Bare Baw Plateau <b>B10</b> The Governors <b>B11</b> Macalister
	<b>A10</b> Davies Plain <b>A11</b> Cobberas <b>A12</b> Buchan Headwaters <b>A13</b> Tingaringy <b>A14</b> Snowy River <b>A15</b> Bowen <b>A16</b> Genoa <b>A17</b> Sandpatch
	<b>B12</b> Dandongdale <b>B13</b> North Buffalo <b>B14</b> Bundara / Cobungra <b>B15</b> Bogong <b>B16</b> Mt. Burrows <b>B17</b> Timbarras Gorge <b>B18</b> Brodribb <b>B19</b> Mt. Kays <b>B20</b> Rame Head <b>B21</b> Cape Howe <b>B22</b> Vereker

- Notes:
- Detailed plans of the Wilderness Areas are shown on maps 1-12. (See Chapter A)
  - Detailed plans of the Other Areas with Remote & Natural Attributes are available on request from the Land Conservation Council.
  - Parks and other conservation reserves as previously recommended by Council, as approved by Government.
  - State forest and other public land as previously recommended by Council, as approved by Government.
  - Areas stippled blue identify wilderness areas previously recommended by Council, as approved by Government.