

**FINAL
RECOMMENDATIONS**

ALPINE AREA

**LAND CONSERVATION COUNCIL, VICTORIA
MELBOURNE, JUNE 1979**

FINAL RECOMMENDATIONS

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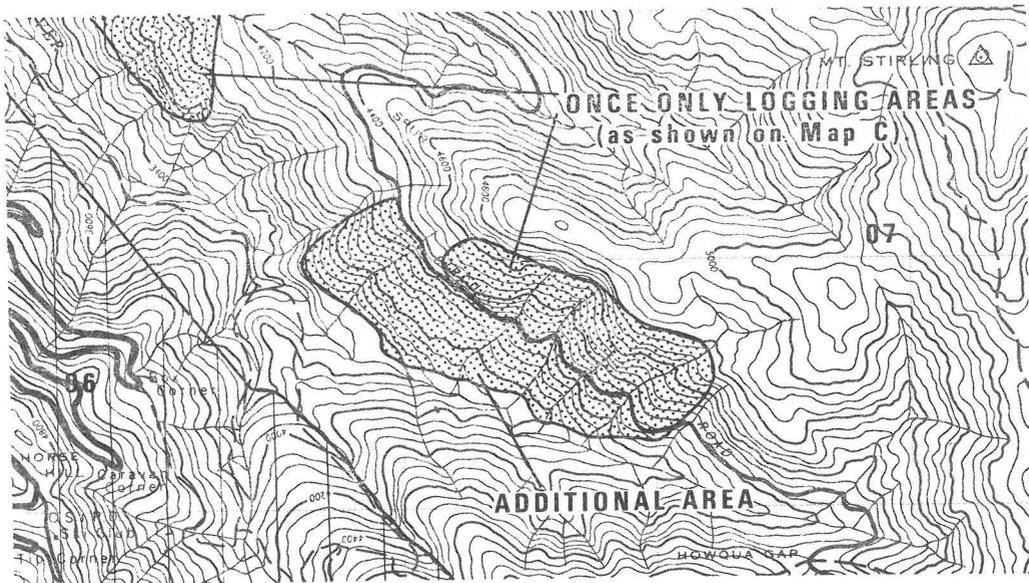
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SCALE 1:30 000

INTRODUCTION

The Land Conservation Council was established by the *Land Conservation Act 1970*. As one of its three functions, it makes recommendations to the Minister for Conservation with respect to the use of public land, in order to provide for the balanced use of land in Victoria. This report contains the Council's final recommendations concerning the public land in the Alpine study area. Notices showing the boundary of the study area and advising that an investigation was to be carried out were published in the *Victoria Government Gazette* of September 5, 1973, and in local and Victorian newspapers in September 1973. A descriptive report was published on July 18, 1977. The Council received 1,538 submissions on the future use of public land. Individuals, associations, companies, and local and State government bodies, representing a wide cross-section of the community, made helpful submissions covering most feasible forms of land use for the area.

After considering these submissions, and having visited the area, the Council formulated its proposed recommendations, which were published on April 7, 1978. The Council subsequently received 14,013 submissions commenting on these proposals. After due consideration, the Council now presents its final recommendations.

Land Uses

Following detailed and lengthy discussions, the Council decided to adopt a planning approach similar to that used in the final recommendations for other areas. Although not recommending the establishment of an Alpine Reserve and advisory body, the Council is still of the opinion that land managers should co-operate with each other in the broad planning and management of similar or adjacent areas, and should make every effort to inform and consult with user groups and local communities on management policies and plans.

Table 1 summarizes the recommendations in terms of the major forms of use. It is important to realize that each primary use has a number of compatible secondary ones. In addition to nominating the best uses for the land, the recommendations indicate what is considered to be the most appropriate form of tenure and the most appropriate management authority.

TABLE 1
RECOMMENDED PUBLIC LAND USE

Major recommended land use	Area (ha)	Percentage of all land covered by these recommendations	Percentage of all public land covered by these recommendations
National Parks	293,400	18	21
State Park	3,100	< 1	< 1
Wilderness	29,500	2	2
Reference Areas	9,860	< 1	< 1
Natural Features and Scenic Reserves	69,130	4	5
Hardwood Production	455,300	28	33
Water Production	8,900	< 1	< 1
Hydroelectricity Production	4,000	< 1	< 1
Historic Areas	12,360	< 1	< 1
Agriculture	1,300	< 1	< 1
Alpine Resorts	7,700	< 1	< 1
Uncommitted Land	499,000	31	36
Other Reserves	2,270	< 1	< 1

Figures are rounded.

Public land recommended to be "uncommitted" in the North-Eastern Area, Districts 3, 4 and 5, and in the Melbourne Area, has been recommended for hardwood production (16,000 ha); and a further area of uncommitted land, in the North-Eastern Area, District 1, has been recommended for a Natural Features and Scenic Reserve (320 ha).

They provide for the establishment of two new national parks, one centred on the Bogong High Plains and the other extending from Mount Cobbler to the divide south of the Moroka gorge. A wilderness is proposed for an area to the south of this latter park. Substantial additions to the Tingaringy and Snowy River National Parks in East Gippsland are also recommended.

Other conservation areas include natural features and scenic reserves, reference areas, and historic areas. Timber production is a major use in 12 regions, but is also a permitted use in uncommitted land and, on a once-only basis, in small areas included in parks. The recommendations also provide for the many recreational activities that take place in the area as well as other uses such as environmental education, mineral and stone production, grazing, and the use of land for surveys and utilities. Throughout the recommendations the Council has been mindful of the importance of this area for water production and this has been an important factor in formulating policies on which land use recommendations are based.

Where demands from competing uses vie for a given area of land, it is not possible to satisfy them all. However, these recommendations attempt to achieve balance in providing for the present needs of most forms of use while retaining flexibility and the opportunity to adjust to future changes in such demands. They do so by placing as much of the public land as possible under forms of use that do not have a major impact on the natural ecosystem, and by placing areas into the "uncommitted land" category. Flexibility in planning is essential. Our knowledge of many resources (for example, minerals) and of the distribution and ecology of plants is very imperfect. There must be many places in Victoria where special values still remain unrecognized and for which no special provision can be made in present planning. Furthermore, future demands for resources on public land may require alteration or modification of these recommendations, which are based on the best information presently available. The Council is aware that review will be necessary to ensure that future land use is in the best long-term interests of the community.

Layout

The recommendations in the text are grouped under major use headings, such as Parks, Hardwood Production, and so on. The text is accompanied by 17 maps. Map A, at the scale of 1 : 250,000, covers the whole study area and gives a broad view of the recommended land uses. Maps B, C, and D, which cover parts of the study area at varying scales, show some areas in greater detail because of the need for better definition of boundaries. Maps 1-13 show details of land considered suitable for agricultural use. More detailed information on boundaries is held by the Land Conservation Council.

General Recommendations

The following recommendations qualify those in the body of the text.

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

The Council wishes to stress the need for adequate management and protection of public land, as it has made its recommendations on the assumption that sufficient manpower and finance will be provided for the appropriate managing authority. Unless these resources are provided, the Council's recommendations cannot be effectively implemented. Council emphasizes that introduced weeds such as blackberry, St. John's wort, sweet briar, and tutsan pose major problems in the management of public land in the alpine area. Finance and staff are

required to research and implement methods for control of these and other noxious weeds. In particular, further research into the biological control of blackberry is important, although conventional control methods should not be neglected. Continued control of wild-dog populations will be necessary, particularly where public land abuts agricultural districts.

- II That, for fire-protection purposes, public land that is not State forest or national park be examined and that appropriate areas be declared protected public land under the *Forests Act* 1958.

The Council has proposed certain additional arrangements for protecting the public land from fire. These have now been incorporated into an amendment to the *Forests Act* 1958. The amendment creates the designation "protected public land", which may include some public land apart from State forest and national park. The Forests Commission is now required to protect all three of these from fire. In national parks and protected public land, the Commission's fire-prevention works are subject to the agreement of the managing authority or, if agreement is not reached, to determination by the Governor in Council. In State forests, which comprise reserved forest and protected forest as defined in the *Forests Act* 1958, the Forests Commission is also responsible for the control and management of the vegetation.

- III That, when significant new features are discovered on land within their administration, government agencies enlist the best advice available on their importance and on any measures that should be taken to conserve them. Advice from organizations other than government authorities and academic institutions should be sought whenever appropriate.

The Council expects that, as a result of further study, many more areas with special values will be identified. Present planning cannot specifically provide for the conservation of these values.

- IV That the present legal status and management of public land in each case be retained until the recommended authorities have the capacity to manage each area.

The Council recognizes that in some cases existing legislation will have to be amended in order to effectively implement these recommendations. Its members are aware that this may result in a delay, in some cases 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 management authority, management efficiency could be reduced during the interim. The Council believes that the government should direct Departments that their responsibilities for management must continue in all areas presently under their control until such time as the recommendations are implemented.

- V That, as many of them have not been precisely surveyed, the boundaries of the areas referred to in the recommendations be subject to minor modification, road excisions, easements, and other adjustments that may be necessary.

- VI That the recommendations in this publication do not change the status of roads passing through or abutting public land that are at present proclaimed and declared roads under the *Country Roads Act* 1958.

- VII That, for areas of public land not specifically referred to in these recommendations, present legal uses and tenure continue.

A. PARKS

Victoria contains substantial areas of public land that have been retained in a relatively natural state. The number of people using these areas for recreation is increasing, and will probably continue to do so. Pressures for the use of public land in ways that would change its condition are also increasing. Council believes that it is essential to reserve, now, viable samples of the various land and vegetation types, together with the outstanding natural features, that occur on public land. These areas can best be reserved in a system of parks.

A park is here defined as "an area of land in a natural or semi-natural condition, reserved because of its scenery, floral and faunal content, historical interest, or other features, which is used by the public primarily for open-space recreation and education". This definition encompasses many different types of parks; they vary mainly in size and content and in the types and intensity of uses to which they are subjected. Definitions of different types of parks are needed to clarify the main purpose for which each one is created, and will help planners, managers, and users of parks.

It is necessary to establish the management aims that apply to areas or zones within parks. Among these, the conservation of native flora, fauna, and other natural features would be an essential part of national and State park management. This should include the identification and strict protection of significant ecological systems as well as the development and use of techniques (including husbandry techniques and population manipulation) to enable species of particular interest to be studied and special values associated with flora and fauna to be maintained or enhanced. Management policies for the conservation of wildlife values in parks should be developed jointly by the managing authority and the Fisheries and Wildlife Division. The location and management of areas zoned for intensive recreation will require special care to prevent damage to the environment.

This publication presents recommendations concerning parks in terms of the uses to which the land should be put. Parks have also been placed into categories, according to the scheme of classification suggested below.

The categories are not to be confused with the existing terminology of national park, forest park, etc., which mainly denotes tenure and the managing body rather than the intended uses. For instance, some of the present national parks are more akin in character to a State or regional park than to the national park of nation-wide significance outlined in the classification.

Road-making materials and minor forest produce

Road construction authorities may use deposits of road-making materials that occur in parks, subject to the agreement of the managing authority, or other authority as set out in the Minerals and Stone Production chapter.

The National Parks Service should consider providing limited supplies of posts, poles and firewood for local domestic use where other sources of supply are not available.

PARK CATEGORIES

National park

An extensive area of public land, of nation-wide significance because of its outstanding natural features and diverse land types, set aside primarily to provide public enjoyment, education, and inspiration in natural environments.

The conservation of native flora, fauna, and other natural features would be an essential part of national park management. Interpretative services would be provided. Development of facilities would be confined to a very small portion of the park. Activities would largely consist of sightseeing and the observation of the natural features. Wilderness zones, which are relatively undisturbed tracts of land used for solitude and wide-ranging forms of recreation, could be designated within a national park.

State park

An area of public land, containing one or more land types, set aside primarily to provide public enjoyment, education, and inspiration in natural environments.

State parks should include samples of each major land type not already represented in national parks and, as in national parks, the conservation of native flora and fauna would be an essential feature of management. Interpretative services would be provided. Development of facilities would be limited to a very small portion of the park. Activities would largely consist of sightseeing and the observation of natural features. Regardless of which authority manages them, the State parks recommended by the Council are intended to complement the national parks so that together they form a State-wide system.

NATIONAL PARKS

Wonnangatta—Moroka National Park

Located in the headwaters of the Howqua, King, Catherine, Wonnangatta, Moroka, Caledonia, and Macalister Rivers, this park contains the alpine summit of Mount Howitt and the distinctive peaks of Mount Cobbler, Speculation, and Kent.

Other outstanding features include rocky cliffs and escarpments on the Viking, the Razor, and the Crosscut Saw, at Bryces Gorge, and around Snowy Bluff and Mount Reynard. Nature conservation values are very high. Vegetation communities range from alpine herbfields on Mount Howitt to snow gum woodlands and grasslands on the Howitt and Bennison plains to alpine ash and riverine forests. Rare plant species include the willow-herb and alpine finger-fern at Conglomerate Creek Falls and the maidenhair spleenwort at Bryces Gorge.

Forest roads from north-eastern Victoria, from the Latrobe Valley, and from Mansfield provide access to parts of the proposed park. There is no through access for conventional vehicles, however, and in winter, when snowfalls close many roads, the area becomes virtually inaccessible except to those on foot.

Recreational pursuits include bushwalking and wilderness recreation—spectacular scenic views are obtained from the Alpine Walking Track, and the Catherine River—Viking and the Mount Darling—Snowy Bluff areas contain large unroaded tracts. Other outdoor activities include cross-country skiing on the Howitt and Bennison plains, four-wheel-drive touring, deer-hunting, horse-riding, and camping.

Recommendation

A1 Wonnangatta—Moroka National Park

That the area of 104,000 ha shown on Map A be used to :

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments

- (b) conserve and protect natural ecosystems
- (c) supply water and protect catchments and streams that
- (d) the Fisheries and Wildlife Division prepare plans for the conservation of wildlife in consultation with the management authority and that, after agreement, these be incorporated into the management plan
- (e) grazing be permitted subject to the policies and conditions specified in chapter Q, Agriculture, except in areas shown by horizontal stripes on the map, where grazing is to be phased out by 1988
- (f) logging not be permitted—except for once-only logging in areas indicated on Maps A and D (these areas, after logging in accordance with the principles set down in chapter I, Hardwood Timber Production, to be regenerated and rehabilitated ; the road and other earthworks west from Shanty Hollow to be revegetated at the completion of logging ; logging operations to be controlled by the Forests Commission, in consultation with the National Parks Service ; and all logging to cease by 1988)
- (g) deer-hunting by stalking be permitted seasonally, the timing and length of season to be determined by the National Parks Service in consultation with the Fisheries and Wildlife Division, and hunting with hounds not be permitted
- (h) the airstrip and associated fire-protection installations on the Snowy Range continue to be operated and maintained by the Forests Commission

and that it be reserved under section 14 of the *Land Act* 1958 pending reservation under the *National Parks Act* 1975, and managed by the National Parks Service.

Note :

Access should continue to be provided through the park to private property at Wonnangatta Station, Bryce Plain, and Eaglevale.

Bogong National Park

This area contains nine of Victoria's ten highest peaks, the Bogong High Plains, the most extensive and spectacular alpine scenery in the State, and large areas of mature and fire-regrowth alpine ash forest.

It provides outstanding opportunities for many forms of outdoor recreation, particularly cross-country skiing, bushwalking, and motor touring. Nature conservation values are very high. The various alpine plant communities, including short herbfield ("snow patch" vegetation), tall herbfield, heathland, and mossland are well represented here. The High Plains support many botanically significant and showy plants, including the Bogong daisy-bush and silky daisy-bush—both endemic to the study area. Sub-alpine woodlands and open areas, alpine ash forests, and foothill forests are also well represented.

Fauna vary from the numerous and varied invertebrate species characteristic of alpine vegetation to the birds and arboreal mammals of the mountain and foothill forests. The rare mountain pigmy possum inhabits heathy snow gum woodland south-east of Mount McKay. Contrasting geomorphic features show remnants of old erosion surfaces (high tablelands) abutting ruggedly dissected terrain. Geological features are varied in age and type, and include intensely metamorphosed (altered) rock, massive fault zones, basalt cappings, showing columnar jointing, and periglacial rock rivers.

The Bogong National Park does not include the Kiewa hydroelectric scheme (Recommendation F1), or the Falls Creek and Mount Hotham alpine resorts. One area within the park, however, (delineated by diagonal stripes on Map B), has special significance in the operation, maintenance, and protection of the hydroelectric scheme. It includes the main water catchment for the scheme and is also important for the protection of installations and catchment areas from fire. Principles for the management of this area are set out below.

Recommendation

A2 Bogong National Park

That the area of 79,000 ha shown on Maps A and B be used to :

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (b) conserve and protect natural ecosystems
- (c) supply water and protect catchments and streams
that
- (d) the Fisheries and Wildlife Division prepare plans for the conservation of wildlife in consultation with the management authority and that, after agreement, these be incorporated into the management plan (particular attention should be given to the protection of the mountain pigmy possum)
- (e) grazing be permitted, subject to the policies and conditions specified in chapter Q, Agriculture, except in the areas indicated on Map B, where grazing is to be phased out by 1988 (areas currently excluded from grazing should remain so and are also indicated on Map B)
- (f) apiculture not be permitted
- (g) mining operations at the Red Robin mine be permitted subject to strict control of placement of mine tailings and use of access ; the existing quarry at Basalt Hill and gravel pit at Pretty Valley continue to be used for the production of stone and gravel respectively as required by the State Electricity Commission and other government authorities
- (h) logging not be permitted—except for once-only logging in areas indicated on the maps (these areas, after logging in accordance with the principles set down in chapter I, Hardwood Timber Production, to be regenerated and rehabilitated ; logging operations to be controlled by the Forests Commission, in consultation with the National Parks Service, and to cease in the West Kiewa and Middle Creek-Bundara River areas by 1988 ; the State Electricity Commission to be consulted also about logging within the area shown by the diagonal stripes on Map B)
- (i) hunting and use of firearms not be permitted
that
- (j) within the area delineated by diagonal stripes on Map B ;
 - (i) management be such that the Kiewa hydroelectric scheme is adequately protected under the State Electricity Commission Acts and Regulations and the quality, quantity, and timing of water produced meets the requirements of the State Electricity Commission

- (ii) fire-prevention works (including construction of vehicular tracks) to protect the State Electricity Commission's assets be planned by the State Electricity Commission in consultation with the Forests Commission and National Parks Service
- (k) the Harrietville-Omeo road reserve via Hotham Heights be excluded from the park, but that the National Parks Service be consulted regarding any proposals for upgrading or realigning the section of this road within the park

and that the Bogong National Park (which includes portion of the area delineated by diagonal stripes on Map B), be reserved under section 14 of the *Land Act 1958* pending reservation under the *National Parks Act 1975* and managed by the National Parks Service.

Note :

The National Parks Service and the State Electricity Commission should consult regarding any proposals that affect the conservation, landscape, or recreation values of the adjacent Kiewa hydroelectric scheme and Falls Creek alpine resort area, and about any development within the park that may affect the operation and protection of the hydroelectric scheme.

Cobberas-Tingaringy National Park

This area adjoins one of 17,000 ha east of the Snowy River, which was recommended as a national park in the final recommendations for East Gippsland. It also adjoins the Kosciusko National Park (in New South Wales) along the Victoria-New South Wales border.

The park is important for nature conservation, as it contains a wide range of geological formations and vegetation types. Elevations range from 160 m to 1,838 m. Geological features include rocky escarpments composed of Snowy River volcanics, periglacial rock rivers, richly fossiliferous sedimentary rocks, limestone caves, and the Reedy Creek and Stradbroke chasms. Cypress pine and white box woodlands, which provide habitat for birds and reptiles typical of warm dry environments, contrast markedly with snow gum woodlands and stands of alpine ash forest at the higher elevations. Unusual vegetation patterns of heathland and mallee shrubland occur on Silurian sediments. Colonies of the rare brush-tailed rock wallaby and, on the Davies Plain Ridge, the only recorded Victorian occurrence of the alpine water skink are of particular importance.

The park is also valuable for a number of forms of outdoor recreation, such as bush-walking, fishing, camping, and motor touring. Its most important recreational features include the Cobberas Range, Limestone Creek and Suggan Buggan valleys, Davies Plain Ridge, and the Reedy Creek chasm.

Recommendation

A3 Cobberas-Tingaringy National Park

That the area of 94,700 ha shown on Map A be used to :

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
 - (b) conserve and protect natural ecosystems
 - (c) supply water and protect catchments and streams
- that

- (d) the Fisheries and Wildlife Division prepare plans for the conservation of wildlife in consultation with the management authority and that, after agreement, these be incorporated into the management plan (particular attention should be given to the protection of the brush-tailed rock wallaby)
- (e) grazing be permitted subject to the policies and conditions specified in chapter Q, Agriculture, and subject to adequate protection of the park and Kosciusko National Park in New South Wales
- (f) logging not be permitted—except for once-only logging in areas indicated on the maps (these areas, after logging in accordance with the principles set down in chapter I, Hardwood Timber Production, to be regenerated and rehabilitated ; logging operations to be controlled by the Forests Commission, in consultation with the National Parks Service; and to cease by 1988)
- (g) hunting and use of firearms not be permitted

and that it be reserved under section 14 of the *Land Act* 1958 pending reservation under the *National Parks Act* 1975, and managed by the National Parks Service.

Notes :

1. The Council notes the mineral potential of the Silurian volcanic and sedimentary deposits in the Cobberas–Tingaringy National Park and believes that exploration of these deposits should be permitted subject to guidelines outlined in the section on mineral and stone production.
Particular attention should be given to roading requirements, and new road access for exploration purposes should be kept to the absolute minimum.
In the event of a viable mineral discovery being made, a decision as to whether mining should take place should be based on whether the operation would be in the State interest including the environmental acceptability of the operation.
2. Council also notes the presence of limestone and marble deposits in the Limestone and Claire Creek valleys.
3. The Black Mountain–Benambra, Wulgulmerang–Jindabyne, and Wulgulmerang–Tubbut roads pass through or adjoin the proposed national park. These roads and their reserves should be excluded from the park. Minor changes to them may be necessary in the event of future upgrading and realignment requirements. Access should continue to be provided through the park to private property at Limestone Creek, Ingegoodbee River, and Tom Groggin.
4. The area shown on Map A as U3 (see chapter U, Uncommitted Land) is enclosed by the proposed national park. Council will reconsider the use of this area when it next reviews land use in the alpine area.

Snowy River National Park

An adjoining area of 25,000 ha east of the Snowy River was recommended as a national park in the final recommendations for East Gippsland.

The section within the alpine area, in common with the section in East Gippsland, comprises part of the Snowy River valley and has outstanding attributes of scenic grandeur. It provides opportunities for activities that include white-water canoeing, bushwalking, and rock-climbing.

Nature conservation values are high. The vegetation is mainly low open forest and woodland, but ranges from white box woodland to mountain ash open forest IV and lowland closed forest II.

Features include several colonies of the brush-tailed rock wallaby, occurrences of mountain ash, "jungle" gullies, several rare or endemic plants, and also attractive limestone formations.

Recommendation

A4 Snowy River National Park

That the area of 15,700 ha shown on Map A be used to :

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (b) conserve and protect natural ecosystems
- (c) supply water and protect catchments and streams
that
- (d) the Fisheries and Wildlife Division prepare plans for the conservation of wildlife in conjunction with the management authority and that, after agreement, these be incorporated into the management plan (particular attention should be given to the protection of the brush-tailed rock wallaby)
- (e) grazing be phased out not later than 1988
- (f) logging not be permitted—except for once-only logging in areas indicated on the maps (these areas, after logging in accordance with the principles set down in chapter I, Hardwood Timber Production, to be regenerated and rehabilitated ; logging operations should avoid disturbance to features of special significance to the park and be controlled by the Forests Commission, in consultation with the National Parks Service, and be completed by 1983)
- (g) hunting and use of firearms not be permitted

and that it be reserved under section 14 of the *Land Act* 1958 pending reservation under the *National Parks Act* 1975 and managed by the National Parks Service.

Notes :

1. The Wulgulmerang-Tubbut road reserve is excluded from the proposed park. Adjustments to the road reserve may be necessary if upgrading and realignment of this road is required in the future. Access should continue to be provided through the park to private property.
2. An area of approximately 20 ha south of McKillops Bridge, excluded from the park, is recommended to be temporarily reserved for possible development associated with this park and the Cobberas-Tingaringy National Park. Any such development would be undertaken only after receiving the prior approval of the National Parks Service (see Recommendation T5).

STATE PARK

Wabonga Plateau State Park

Final recommendations for the North-Eastern Area, Districts 3, 4, and 5 included a recommendation for a State park of 18,600 ha adjacent to the alpine area. At that time Council indicated that it would consider extending the park when making recommendations for the alpine area. The addition of 3,500 ha to the State park as is here recommended will bring the total area to 22,100 ha.

The main feature of this section of the park is the dissected topography on Devonian-Carboniferous volcanic and sedimentary rocks. The extensive areas of rock outcrops are of particular geological interest.

The park supports a rich flora, in which open forest II and III of broad-leaf and narrow-leaf peppermint and their associated species predominate ; small pockets of alpine ash forests add diversity.

Recommendation

A5 Wabonga Plateau State Park

That the area of 3,100 ha shown on Map A be used to :

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of natural environments
- (b) conserve and protect the natural ecosystems
- (c) supply water and protect catchments and streams that
- (d) emphasis be placed on conserving the park's rich flora
- (e) grazing continue at a level that is compatible with (d) above, but be phased out within a period of 10 years after the park is approved by Order in Council
- (f) logging not be permitted—except for once-only logging in areas indicated on the map (these areas, after logging in accordance with the principles set down in chapter I, Hardwood Timber Production, to be regenerated and rehabilitated ; logging operations to be controlled by the Forests Commission, in consultation with the National Parks Service; and to be completed by 1988)

and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the National Parks Service.

B. WILDERNESS

The concept of wilderness ("an uncultivated and uninhabited tract"—*Oxford English Dictionary*) has received attention in Australia for many years, particularly since the early 1960s. The need to set aside areas because of their value as wilderness has been recognized by some Australian States.

The wilderness experience involves the perception of being part of nature, of an environment unaltered by human intervention, of isolation, and of being exposed to the challenge of the elements.

The main elements of the appeal of wilderness are :

- * spiritual refreshment and an awareness of solitude arising from close contact with the uninhabited, substantially undisturbed, natural environment
- * the knowledge that there still exists a large natural area in which plants, animals, and soils can survive and interact with minimal interference by Man
- * refuge from the pressures, sights, and sounds of modern urban life
- * the adventure and challenge of putting one's powers of endurance and self-reliance to the test in substantially undisturbed natural environments.

Council recognizes that the perception of wilderness areas and the requirements necessary to provide wilderness experience vary throughout the community. This was shown by the diversity of views expressed in a large number of submissions Council received on the subject. For some people, a short walk in part of a State park (or even a regional park) may provide it. Others seek areas of scenic grandeur providing extensive views and, to some, man-modified components in what is an essentially natural landscape do not appear to detract significantly from the wilderness experience.

Many of the areas with high scenic quality have been included in proposed national parks, as they are already popular for bushwalking and are becoming increasingly so. The Council believes that this will provide for a greater range and number of visitors than future management of these areas for wilderness would permit. The combination of relative isolation and panoramic views in a mountainous environment will satisfy the wilderness needs of many people. For example, the Wonnangatta-Moroka National Park contains extensive areas of rugged topography with few vehicular tracks, and is separated from the Avon area, recommended as Wilderness, by a strip of land containing one road. It is Council's view that, when the two areas are considered together, as well as the other parks, the wilderness requirement of most people has been substantially provided for.

Avon Wilderness

This area includes parts of the catchments of the Avon, Dolodrook, and Turton Rivers. A large roadless "core" area is situated in the headwaters of Mount Hump Creek, where more than 4,000 ha has no vehicular track within 3 km. Environments range from sub-alpine woodlands and open areas, to dense tall regrowth forests of mountain ash and shining gum, to stunted dry foothill forests. Climatic conditions vary from hot and dry in summer, particularly at the lower elevations, to very cold with regular snowfalls at the higher elevations during winter.

The area is substantially unaltered, has a relatively high carrying capacity, and offers opportunities for solitude and for a range of challenging activities. For example, cliffs and rocky escarpments, particularly around Gable End and the Wellington Plateau, provide opportunities for rock-climbing. Obvious bushwalking routes are located along the Avon, Turton, and Dolodrook Rivers and the main ridges separating them, for example the Razorback and Purgatory Spurs. Because it will probably attract only the more hardy wilderness-user, the main elements of the appeal of wilderness are likely to be maintained.

Uses and management

Recreation activities such as hiking, rock-climbing, bow hunting, fishing, cross-country skiing, and nature observation would be permitted within this area. Timber production, grazing, and mining would be excluded, as would the use of firearms. Motorized vehicles, other than those essential for management, would also be excluded.

In order to maintain the value of the wilderness for solitude and unconfined types of recreation, it may ultimately be necessary to control the number of people using the area at any one time. Experience in the United States has shown that tourism and the more conventional forms of outdoor recreation commonly associated with parks are among the greatest threats to wilderness, and should not be accommodated in such an area. It may also be necessary to place restrictions on some activities so that conflict between wilderness-users is minimized.

Wildfires, however caused, must be prevented from threatening life, property, and natural resources in the State, and the measures necessary to control them must be taken in a wilderness area as in any other. Some pre-suppression measures, such as maintenance of fire-access tracks and protective burning, will be required, at least in areas of strategic importance for fire control. A carefully designed and managed fire-prevention programme in the adjacent areas may reduce the requirement for such activities in some areas of the wilderness. Prevention and suppression of fires will remain the responsibility of the Forests Commission.

When tracks are maintained for essential management operations, their use other than for these specific purposes will not be permitted. By careful maintenance, many tracks can continue to be passable for fire-fighting, rescue, and management vehicles, without clearing all vegetation. Construction of helipads may be an alternative to maintaining all of an extensive track system.

It will be necessary to control vermin and noxious weeds within the wilderness area, and particularly in the land immediately surrounding it, to ensure that the area itself is protected and that adjoining land is not threatened by pest species from within it.

Users of wilderness must be prepared to face difficult and challenging conditions, and Council stresses the need to bring to the attention of the public the potential hazards associated with the use of these areas. In general, it is expected that the lack of vehicle access, the topography, and the location of this wilderness area will tend to discourage the inexperienced.

Recommendation

B1 Avon

That the area shown on the map (29,500 ha) be used to :

- (a) provide opportunities for solitude and unconfined forms of recreation in substantially unmodified natural environments

that

- (b) its value for providing solitude be maintained by controlling the numbers of people using the wilderness at any one time
- (c) construction of roads or tracks and the entry of vehicles not be permitted, other than for the management purposes
- (d) grazing within it be terminated as soon as practicable but not later than 3 years after the acceptance of these recommendations

and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Forests Commission in accordance with a management plan prepared by the Forests Commission in consultation with the National Parks Service.

Note :

Council is aware of the history of fire in this general area ; it therefore believes that, within the wide belt of public land adjoining the proposed wilderness on its eastern, southern, and western borders, and in the wilderness zone itself, all measures necessary for fire protection and control should be taken. Adequate control of pest plants and animals is also essential.

C. REFERENCE AREAS

Reference areas are tracts of public land containing viable samples of one or more land types that are relatively undisturbed and that are reserved in perpetuity. Those concerned with studying land for particular comparative purposes may then refer to such areas, especially when attempting to solve problems arising from the use of land.

Reference areas include typical examples of land types that have been modified elsewhere for productive uses such as agriculture, mining, or intensive timber production. The course and effects of human alteration and utilization can be measured against these relatively stable natural areas.

In common with references and standards used in other fields, these areas must not be tampered with, and natural processes should be allowed to continue undisturbed. Reference areas should be sufficiently large to be viable and should be surrounded by a buffer, the width of which would vary according to the activity occurring on the adjacent land. The role of the buffer is to protect the area from damaging or potentially damaging activities nearby. It will also protect important values in the surrounding land from potentially damaging natural processes occurring within the reference area.

Access should be restricted, and experimental manipulation should not be permitted. Setting aside such areas will enable continued study of natural features and processes : for example, fauna, hydrology, and nutrition. These studies are important in increasing our knowledge of the ecological laws and processes on which Man's survival may ultimately depend.

The preservation of some species in the long term requires the setting aside of areas free from human interference (in the form of productive or recreational use of the land). These areas preserve a valuable pool of genetic material. Man often uses wild species to genetically strengthen inbred races of domestic plants and animals—and the future use of gene pools will probably expand far beyond this.

The *Reference Areas Act 1978* provides for reference areas to be proclaimed by the Governor in Council, and for the Minister to issue directives for their protection, control, and management. An advisory committee, established under the Act, will assist the Minister.

Note :

The selection of the reference areas listed here is based on current knowledge of the land types in the study area, and additional areas may be needed as better information on ecology and land-use problems becomes available.

Recommendations

C1-C18 That the areas listed below and shown on the map :

- (a) 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, especially when attempting to solve problems arising from the use of land
- (b) be surrounded by a buffer, and that delineation of the buffer be by joint agreement between the managing authorities of the area itself and of the land adjacent to the area and the advisory committee

that

- (c) activities—such as grazing, mineral exploration, mining, and logging—that conflict with the purposes of a reference area not be permitted, and any such activities in the reference areas listed below cease when these recommendations are adopted

and that the areas be permanently reserved under section 14 of the *Land Act* 1958 and managed by the authority indicated in the schedule below.

Note :

Grazing should be phased out in the two reference areas on the Bogong High Plains in conjunction with the phasing out of grazing on the surrounding land—see Recommendation A2 (e).

C1 East Caledonia (500 ha)

To be managed by the National Parks Service

Lower Carboniferous–Upper Devonian sediments, flat to mountainous ; elevation 840–1,580 m ; approximate annual rainfall 1,300 mm ; sub-alpine woodland snow gum, sub-alpine open area, open forest IV alpine ash, open forest III narrow-leaf peppermint.

C2 Wonnangatta River (500 ha)

To be managed by the National Parks Service

Ordovician sediments, hilly ; elevation 500–1,040 m ; approximate annual rainfall 1,000 mm ; open forest IV alpine ash, open forest III narrow-leaf peppermint, open forest II broad-leaf peppermint.

C3 Mount McAdam (200 ha)

To be managed by the National Parks Service

Ordovician sediments, hilly ; Quaternary Recent alluvial deposits, river flats ; elevation 320–840 m ; approximate annual rainfall 700–800 mm ; open forest III manna gum–narrow-leaf peppermint, open forest II broad-leaf peppermint and red stringybark.

C4 Thirteen Mile Spur (300 ha)

To be managed by the Forests Commission

Ordovician sediments, mountainous ; elevation 600–1,200 m ; approximate annual rainfall 1,000 mm ; open forest IV mountain ash and alpine ash, open forest III messmate stringybark.

C5 Blue Rag (680 ha)

To be managed by the Forests Commission

Ordovician sediments, mountainous ; elevation 700–1,660 m ; approximate annual rainfall 1,400–1,600 mm ; sub-alpine woodland snow gum, open forest IV alpine ash, open forest III narrow-leaf peppermint, open forest II broad-leaf peppermint.

C6 Boiler Plain (850 ha)

To be managed by the National Parks Service

Tertiary Oligocene basalt, Tertiary Eocene gravels, undulating ; Ordovician sediments, mountainous ; elevation 900–1,580 m ; approximate annual rainfall 1,400–1,600 mm ; sub-alpine woodland snow gum, sub-alpine open area, open forest IV alpine ash, open forest II broad-leaf peppermint.

C7 Lagoon Plateau (970 ha)

To be managed by the Department of Crown Lands and Survey

Tertiary Oligocene basalt, undulating ; Ordovician sediments, mountainous ; elevation 600–1,200 m ; approximate annual rainfall 1,100 mm ; sub-alpine open forest mountain gum–snow gum, open forest III narrow-leaf peppermint, open forest II broad-leaf peppermint.

C8 Shepherds Creek (710 ha)

To be managed by the Department of Crown Lands and Survey

Ordovician sediments, undulating to mountainous ; elevation 800–1,320 m ; approximate annual rainfall 1,000 mm ; sub-alpine open forest mountain gum, open forest IV alpine ash, open forest II broad-leaf peppermint.

C9 Spring Creek (650 ha)

To be managed by the Department of Crown Lands and Survey

Upper Ordovician–Lower Silurian gneiss and schist, undulating to low hills ; elevation 1,200–1,480 m ; approximate annual rainfall 1,200 mm ; sub-alpine open area, sub-alpine woodland snow gum, sub-alpine open forest mountain gum–snow gum, open forest IV alpine ash.

C10 Hollonds Knob (320 ha)

To be managed by the National Parks Service

Upper Ordovician schists, undulating ; elevation 1,480–1,800 m ; approximate annual rainfall 2,200 mm ; sub-alpine woodland snow gum, alpine and sub-alpine open area grassland and mossland.

C11 Whiterock Creek (250 ha)

To be managed by the National Parks Service

Upper Ordovician gneiss, mountainous ; Tertiary Pliocene alluvial terraces, undulating to mountainous ; elevation 1,420–1,820 m ; approximate annual rainfall 2,400 mm ; alpine open area grassland, herbfield, and mossland, sub-alpine open forest snow gum.

C12 Burnside (1,190 ha)

To be managed by the Department of Crown Lands and Survey

Upper Silurian granite, Ordovician schist ; hilly to mountainous ; elevation 600–1,300 m ; approximate annual rainfall 800–1,000 mm ; sub-alpine open forest mountain gum–snow gum, open forest IV alpine ash, open forest III narrow-leaf peppermint, open forest II broad-leaf peppermint.

C13 Porphyry Hill (240 ha)

To be managed by the Department of Crown Lands and Survey

Upper Ordovician–Lower Silurian schist, hilly ; Ordovician–Devonian granite, undulating ; elevation 520–800 m ; approximate annual rainfall 700 mm ; open forest III narrow-leaf peppermint, open forest II broad-leaf peppermint, open forest I snow gum–black sallee.

C14 Wombat Creek (320 ha)

To be managed by the Department of Crown Lands and Survey

Tertiary Pliocene basalt, flat ; Silurian sediments, hilly ; elevation 480–960 m ; approximate annual rainfall 1,100 mm ; open forest III narrow-leaf peppermint, open forest II manna gum and broad-leaf peppermint.

C15 Lightwood (550 ha)

To be managed by the Forests Commission

Silurian rhyodacite, undulating to low hills ; elevation 840–1,170 m ; approximate annual rainfall 1,200 mm ; open forest IV alpine ash, open forest III narrow-leaf peppermint.

C16 Buenba (330 ha)

To be managed by the Department of Crown Lands and Survey

Ordovician sediments, low hills to flat ; elevation 860–1,080 m ; approximate annual rainfall 1,100 mm ; open forest III narrow-leaf peppermint, open forest II broad-leaf peppermint and candlebark–snow gum–mountain swamp gum.

C17 Tom Groggin (940 ha)

To be managed by the National Parks Service

Ordovician–Devonian granite, Silurian sediments ; mountainous to hilly ; elevation 1,000–1,580 m ; approximate annual rainfall 1,100–1,300 mm ; sub-alpine woodland snow gum, open forest IV alpine ash, open forest III narrow-leaf peppermint.

C18 Forest Hill (360 ha)

To be managed by the National Parks Service

Silurian sediments, hilly ; elevation 1,020–1,360 m ; approximate annual rainfall 1,000–1,200 mm ; sub-alpine woodland snow gum, sub-alpine open forest mountain gum–snow gum, open forest II narrow-leaf peppermint.

D. NATURAL FEATURES AND SCENIC RESERVES

These reserves set aside land containing outstanding landscapes, geological formations, significant plant communities, or other natural features that warrant special protection. The maintenance of these features would be the main aim of management. Levels of permitted activities such as recreation and grazing may need close control in some areas where protection of features such as significant plants may require special measures. Any road construction would be minimal and carefully planned in each reserve. Logging would not be permitted, except where specified below (D4 and D7). The management authority for each reserve has been designated with the aim of facilitating the management of both the reserve itself and the adjacent land.

Recommendations

D1-D30 That the areas listed below and shown on the map be used to :

- (a) maintain natural landscapes and features
 - (b) provide opportunities for recreation and education
 - (c) supply water and protect catchments and streams
 - (d) conserve native plants and animals
- that
- (e) the Fisheries and Wildlife Division prepare plans for the conservation of wildlife in consultation with the management authority and that, after mutual agreement, these be incorporated into the management plan
 - (f) grazing be permitted in these reserves subject to the policies and conditions specified in Chapter Q, Agriculture, except for the Bluff area (D4) as indicated on Map A
 - (g) apiculture be permitted
 - (h) any new roading be constructed only where essential for management and protection purposes and be designed to minimize effects on scenic and nature conservation values

and that the areas be permanently reserved under section 14 of the *Land Act* 1958 and managed by the authority indicated in the schedule below.

Note :

Many of these areas are high ridges of snow gum woodland flanked by forests of alpine ash. On such ridges the natural features zone is intended to include a strip of alpine ash, with a minimum width of 40 m where possible. The small quantities of timber these areas include would not be harvested.

D1 Mount Useful (500 ha)

To be managed by the Forests Commission

The rounded summit of the mountain supports sub-alpine heathlands and herbfields, surrounded by woodlands and thickets of snow gum and ash-mallee. The old mining track known as McEvoys Track passes through the area. A fire look-out tower is situated at the summit.

- D2** Mount Skene (1,650 ha)
To be managed by the Forests Commission
The Jamieson–Licola tourist road traverses this high ridge of sub-alpine woodland, which contains the most westerly occurrence of ash-mallee. A fire look-out is situated on the main ridge south of Mount Skene.
- D3** The Governor (16,050 ha)
To be managed by the Forests Commission
The Governor and Eagle Peaks are isolated and prominent peaks located in this largely unroaded area. Other scenic features include the southern approaches to Mount Buller and portions of the Howqua and Jamieson (North Branch) River valleys.
- D4** The Bluff–Mount Clear (10,970 ha)
To be managed by the Forests Commission
A high ridge system dominates the adjacent valleys, and the area contains spectacular landscapes formed from flat-lying sedimentary rock strata. A few summits are capped with basalt. Scenic features include the Bluff, Mount Magdala, Mount Clear, and Mount McDonald. A stand of 45 ha of alpine ash immediately south-east of Lovicks Hut (indicated on Map B) is included in this reserve. Logging on a once-only basis should be permitted in limited areas as indicated on Map A.
- D5** The Crinoline or Mount Ligar (750 ha)
To be managed by the Department of Crown Lands and Survey
The mountain derives its popular name from the horizontal bands of sandstone protruding from its slopes. This distinctive landscape feature and the adjacent plateau just to the north lie on a popular walking route.
- D6** Trapyard Hill–Tali Karng (16,250 ha)
To be managed by the Forests Commission
This diverse and spectacular area includes snow plains in the headwaters of the Moroka River, Lake Tali Karng, open woodlands on Cambrian-age rocks in the Dolodrook valley, and the environs of the Wellington River.
- D7** Bennison (3,390 ha)
To be managed by the Forests Commission
The upland valley of Shaws Creek contains a number of small snow plains bordered by snow gum woodlands and is a popular area for activities such as camping, walking, and fishing. Logging on a once-only basis should be permitted in a limited area as indicated on Map A.
- D8** Pinnacles–Castle Hill (2,070 ha)
To be managed by the Department of Crown Lands and Survey
The rim of the Moroka Basin affords extensive views of the Wonnangatta valley, particularly from prominences such as Mount Kent, the Pinnacles (site of a fire look-out) and Castle Hill ; conversely it forms an impressive landscape feature viewed from the valley itself.

D9 Mount Sarah (840 ha)

To be managed by the Forests Commission

The high point is viewed from various surrounding areas ; the spring near Guys Hut, which is surrounded by grassy snow gum woodland, is strategically placed for visitors travelling along the Tea Tree Range.

D10 Barry Mountains (2,390 ha)

To be managed by the Forests Commission

Mount Murray—a high peak—overlooks the Wongungarra valley. The remainder of the area forms part of the Barry Mountains—a section of the Alpine Walking Track—and consists of high mountain peaks and ridges covered for the most part with snow gum woodland but also on some southern aspects, alpine herbfields and heathlands.

D11 Mount Freezeout (540 ha)

To be managed by the Department of Crown Lands and Survey

The steep ridges of snow gum provide scenic landscapes adjacent to the Dargo road.

D12 Blue Rag Range (1,140 ha)

To be managed by the Department of Crown Lands and Survey

The high prominent ridge rivals the Mount Murray-Twins section of the Barry Mountains as a landscape feature. Southern aspects below the ridge-top support alpine herbfields and heathlands.

D13 Dargo High Plains (1,700 ha)

To be managed by the Department of Crown Lands and Survey

This area is perhaps the best-known of the Dargo Tablelands. Its main features are Lankey Plain, site of the highly significant plants *Epilobium willisii* and *Wahlenbergia densifolia* ; Devils Hollow and the King Spur ; and cliffs of columnar basalt overlooking the Dargo River headwaters.

D14 Livingstone Creek (490 ha)

To be managed by the Forests Commission

Woodlands of Omeo gum, black sallee, and mountain swamp gum, together with associated grasslands and heathlands, grow along the environs of Livingstone Creek.

D15 Mount Wills (840 ha)

To be managed by the Forests Commission

Although isolated, the mountain is readily accessible from the Omeo Highway and from the Alpine Walking Track, which passes through part of the area. Its snow gum-covered upper slopes and large granite tors along the summit ridge are distinctive. A fire look-out is situated at the summit.

D16 Granite Peak (110 ha)

To be managed by the Forests Commission

The messmate stringybark stands here lie at the northern edge of this species' distribution in Victoria. These grade into alpine ash forests at their upper limit, and snow gum woodlands replace alpine ash near the summit. The distinctive landscape feature of this peak is its almost conical slope.

D17 Mount Benambra (240 ha)

To be managed by the Forests Commission.

The prominent mountain overlooks Dartmouth Reservoir, and carries a fire look-out on its summit. Snow gum woodlands cover the upper slopes.

D18 Mount Cravensville (550 ha)

To be managed by the Forests Commission

Like nearby Mount Benambra, this mountain is composed of Silurian volcanic rocks. The summit area forms a small basin rimmed by snow gum woodlands.

D19 Mount Barlow (1,000 ha)

Also recommended is an extension of this area north into uncommitted land in the North-Eastern Area, District 1 (320 ha).

To be managed by the Forests Commission

The rugged topography of this area, which adjoins the Kosciusko National Park in New South Wales, is a significant scenic element of the headwaters of the Murray River.

D20 Thowgla headwaters (80 ha)

To be managed by the Forests Commission

This stand of alpine ash forest has attractive scenic qualities because of its open spacing of trees and grassy forest floor. Its retention within an area set aside for timber production will provide scenic amenity.

D21 Pinnibar (550 ha)

To be managed by the Forests Commission

Attractive snow gum woodlands cover slopes that ascend towards Mount Pinnibar from the Pinnibar Plateau and Wheeler Creek valley.

D22 Wild Boar Range (530 ha)

To be managed by the Forests Commission

The range includes Mount Sassafras, which overlooks the valleys of the Gibbo River and Zulu and Wheeler Creeks. The snow gum-covered ridge lies on the Alpine Walking Track and is viewed from Mounts Pinnibar and Gibbo.

D23 Mount Gibbo (1,430 ha)

To be managed by the Forests Commission

This high mountain ridge covered by snow gum woodland lies along the Alpine Walking Track. Like Mount Pinnibar nearby, it affords extensive views of the Kosciusko National Park.

D24 Benambra Creek Cascades (150 ha)

To be managed by the Department of Crown Lands and Survey

Snow gum woodlands cover a hill formed of Triassic igneous rocks, and Benambra Creek forms cascades where it crosses resistant Ordovician bedrock.

D25 Macfarlane Lookout (300 ha)

To be managed by the Department of Crown Lands and Survey

The rocky scarps and cliffs of this distinctive mountain are formed from Triassic igneous rocks.

D26 Mount Tambo (2,740 ha)

To be managed by the Department of Crown Lands and Survey

The rocky mountain range, composed largely of red to purple conglomerates of Upper Devonian age, forms a spectacular landscape feature visible from both the Benambra and Bindi districts. The vegetation varies from dry foothill forests of red stringybark and brittle gum, through moist foothill forests of messmate stringybark and narrow-leaf peppermint, to pockets of alpine ash forests and summit areas of snow gum woodland.

D27 Nunniong Plain (490 ha)

To be managed by the Forests Commission

The Nunniong tablelands are characterized by a series of open plains interspersed with snow gum woodlands and stands of alpine ash. This area includes many of their notable scenic features, such as Big Nunniong Plain, Lowe Plain, and Lake Hill (which is a basaltic plateau carrying a shallow sub-alpine lake). The highly significant plant species *Oreomyrrhis argentea*, *Wahlenbergia densifolia*, and *Hydrocotyle* sp. aff. *sibthorpioides* are found in the area.

D28 Nunnett Plain (900 ha)

To be managed by the Forests Commission

The central feature of this area is Nunnett Plain—a sub-alpine grassland plain surrounded by snow gum woodlands on topography developed from Tertiary-age basalt.

D29 Bentley Plain (150 ha)

To be managed by the Forests Commission

Sub-alpine grasslands and heathlands are surrounded by attractive snow gum-mountain gum forest. "Moscow Villa", a picturesque hut located beside Bentley Plain, also attracts visitors.

D30 Mount Stewart (340 ha)

To be managed by the Forests Commission

Mount Stewart, a granite hill overlooking the clearing at Glenmore in the Buchan River valley, carries heathlands growing on shallow rocky soils. Showy plants include an undescribed *Eriostemon* species considered to be of high botanical interest. The nearby waterfalls on an attractive section of Mellick Munjie Creek are also included in the area.

E. WATER PRODUCTION

The catchments of the study area are extremely important for water production. Much of the area receives high rainfalls, particularly at the higher elevations, where winter precipitation is stored in the form of snow. Snow melt in spring and early summer helps maintain summer stream flow. The highest elevations produce more water per unit area than any other part of the State, and the quality in most streams is high.

Current management and use

The alpine area contributes about one-quarter of the State's water, part of which Victoria shares with New South Wales and South Australia through the River Murray Commission. The area supplies water to major storages including Lakes Hume, Eildon, and Glenmaggie and the smaller Lake William Hovell and Lake Buffalo, all of which lie outside its boundary, and the Dartmouth Reservoir, which lies within it. Large irrigation districts in northern Victoria and in Gippsland draw water from these storages. Storages and streams in this area also provide water for hydroelectric power, for domestic consumption in large centres such as Albury-Wodonga, Wangaratta, and Bairnsdale, and in numerous smaller towns and individual houses, for privately operated irrigation of crops and pastures, and for stock water. Planning is well advanced for a storage on the Mitchell River, which has a large part of its catchment in the study area.

Four catchments that lie partly within the study area (those of Lakes Hume, Eildon, and Glenmaggie, and the Nicholson River), and one (the Upper Kiewa catchment) completely within it, are Proclaimed Water Supply Catchments. The Soil Conservation Authority has already been given a specific responsibility by the State government to exercise supervisory control over all the grazing and earthworks on land above 1,219 m elevation. In addition, the use of all land in proclaimed catchments may be subject to specification by notice issued by that Authority, or by determination made by the Authority after consultation with the Land Conservation Council.

Land above 1,200 m has the highest water yield in Victoria and is very sensitive to disturbance of soils and vegetation. Most of it is already included in those five proclaimed catchments. To protect the rest and ensure common standards of land use, the remaining catchments with land above 1,200 m will need to be proclaimed.

No catchment in the area is closed to the public and used solely for water production, although the State Electricity Commission exercises restrictions on vehicular use, camping, and lighting of fires in the upper Kiewa catchment.

Multiple use

Recognizing that the prime water-producing areas of the State coincide with the principal mountain and forested areas, and that these areas together with inland water bodies form major attractions for recreation, the Council believes that, wherever possible, catchments should be managed for a multiplicity of uses. Where recreational use of storages is permitted, it must be carefully controlled to ensure adequate protection of water quality, and responsibility for this must remain with the water supply authority.

The Council realizes that the optimum combination of land uses for catchments will vary from one land type to another : a particular use that may not impair the quantity, frequency, or quality of water yield in one instance may have a profound effect in another.

Where multiple use is required of a catchment supplying water used for power generation or for domestic, industrial, or irrigation purposes, the catchment should be proclaimed under section 5 (1) of the *Land Conservation Act* 1970 and section 22 (1) of the *Soil Conservation and Land Utilization Act* 1958. This will require the proclamation of additional catchments.

Council believes that in most situations it is not necessary for a water supply authority to control and manage all land in its water catchment. Public authorities managing land within a proclaimed catchment must, however, consult, co-operate, and reach agreement with the water supply authority and the Soil Conservation Authority regarding the type, location, and timing of management activities. This is the current practice in most areas.

On the other hand, the water supply authority should control and manage the buffer strip (defined in the land use determination) around storages and diversion works in addition to the storages and the areas on which capital works are situated. Although the primary object of management in the buffer must always be to protect water quality, in some situations secondary uses (such as recreation and timber production) can be permitted.

In such circumstances, the water supply authority and any other authorities concerned must agree upon the principles of management.

Water quality, yield, and regulation

It is possible to improve the quality of water by treatment—at a cost. It must, however, be recognized that the higher the original quality of the water, the cheaper and more efficient is the treatment and, in most cases, the more acceptable the end product. It is also vital to safeguard the quantity and timing of yield. Catchments must be protected from loss of infiltration capacity, damage to other hydrologic properties, soil erosion, and contamination from chemical or biological sources.

Proper management of land uses within catchments is extremely important and recognition must be given to the need for high levels of protection, particularly in the ecologically sensitive areas such as those above 1,200 m. Values such as water yield, quality, and flow regime must be of major concern when implementing recommendations for public land within catchments. The Council recognizes the need for research to provide guidelines for such management.

Additional water needs

Future water needs for the production of electricity, and for domestic, stock, and irrigations purposes, may require the construction of additional water storages. When planning these, the possible effects of the storages and their water releases on the ecosystems in the vicinity (in particular the effects on fish and wildlife habitat downstream) should be determined and taken into account.

The Council appreciates that it will probably be necessary to develop additional facilities associated with such schemes, but cannot make specific provision for those developments until definite proposals are made. Their environmental effects should be assessed before proceeding.

Recommendations

E1-E5 That in the case of the locations listed below and shown on the map (all these locations being within catchments for which no land use determinations have been made), the present tenure and management of public land continue for the time being

that, once a land use determination has been made, the following areas :

- * the storage areas
- * diversion works
- * aqueducts
- * associated facilities
- * the buffer strips around diversion works and storages, as defined in the land use determination

be used for

- * water supply purposes
- * other activities permitted by the water supply authority after consultation with the Soil Conservation Authority and the Environment Protection Authority

and that these areas be permanently reserved under section 14 of the *Land Act* 1958 for water supply purposes, and be managed by the water supply authority named.

Notes :

1. The buffer should be wide enough to prevent direct pollution, to filter overland flow of water, and to control access. Its width will vary to suit differences in ground slope, soil type, vegetative cover, adjoining land use, and type of facilities available for treating the water. This will be established by the Soil Conservation Authority when the land use determinations for the catchments are made.
2. The primary object of management of the buffer must be to protect water quality. Subject to this principle, the water supply authority may permit other secondary uses on the buffer. In such cases, the principles of management must be agreed upon by that authority and any other authorities concerned.
3. In some instances it may not be practical for the water authority to manage all or part of the buffer. In such cases agreement should be reached between the adjacent land management authority and the water supply authority at the time of a land use determination. The agreement may include leaving the management of the buffer with the adjacent land management authority on the basis that it would be managed with the prime object of protecting the water quality.

E1 Mount Tabor Creek storage : State Rivers and Water Supply Commission

E2 Dartmouth Reservoir : State Rivers and Water Supply Commission

E3 West Kiewa and Simmonds Creek diversions : Mount Beauty Waterworks Trust

E4 Livingstone Creek diversion : Omeo Waterworks Trust

E5 Tambo River diversion : Swifts Creek Waterworks Trust

F. HYDROELECTRICITY PRODUCTION

Within the Alpine area a major hydroelectric scheme is situated on the Kiewa River and another is under construction on the Mitta Mitta River below the Dartmouth Dam.

The proclaimed Upper Kiewa catchment extends south from Tawonga to Mounts Jim, Bundara, and Cope on the Bogong Tablelands, and to Mount Hotham. Most of the catchment falls within the Kiewa Works area, which is administered by the State Electricity Commission under regulations designed to protect the Kiewa hydroelectric scheme.

The catchment of the Mitta Mitta River that supplies the Dartmouth project is within the catchment for Lake Hume, which was proclaimed in 1950.

Council's policy on the control and management of water supply catchments where multiple use is recommended is set out in the section on multiple use in chapter E, Water Production. The recommendations for the public land within the two catchments referred to above conform with this policy.

Additional electricity needs

The State Electricity Commission has investigated a number of areas with regard to possible future development. These include :

- * An expansion of the Kiewa hydroelectric scheme by utilization of the 400 m head difference between McKay Creek power station and Junction Dam (Lake Guy). (This proposal would require a new power station, conduits, and aqueducts, and storage and diversion dams in both the Kiewa catchment and the headwaters of the Mitta Mitta and Cobungra Rivers.)
- * A pumped storage-development located on the western escarpment of the Bogong High Plains between Pretty Valley and the West Kiewa River. (The lower-level storage would be located at the confluence of the Diamantina and West Kiewa Rivers and the upper-level storage in the headwaters of the Tawonga Hut Creek. The transmission line would be located along the West Kiewa River.)
- * A pumped-storage development located on Cullen Creek, north of Licola. (The upper storage would be situated in the headwaters of Cullen Creek and the lower one at the junction of Cullen and Mount Skene Creeks. The transmission line from the scheme would probably follow the Barkly River to Licola and then to the Latrobe Valley.)

The Council appreciates that it may be necessary to develop additional facilities associated with such schemes, but cannot make specific provision for those developments until definite proposals are made. Their environmental effects should be assessed before proceeding.

Kiewa hydroelectric scheme

The Kiewa hydroelectric scheme at present consists of three power stations, located in the East and West Kiewa valleys, which generate electricity from water derived from the upper Kiewa and upper Mitta Mitta catchments.

The scheme supplies about 2.7 per cent. of the State's total electricity output. It is valuable for meeting peak-load requirements and will assume increasing importance until the expected shortfall in generating capacity is overcome sometime in the late 1980s.

The State Electricity Commission of Victoria has indicated that there may be a need to extend the scheme in the future. Proposals for extensions would be considered when they became definite.

Recommendation

F1 That the area—which includes the Kiewa hydroelectric scheme—shown on Maps A and B be used to :

- (i) transport, store, and regulate water for the generation of electricity
- (ii) operate, maintain, and protect hydroelectric installations
- (iii) provide low-intensity recreation and protect nature conservation values in parts of the area, consistent with State Electricity Commission requirements that
- (iv) areas adjacent to the Falls Creek alpine resort may be used for activities associated with the resort, but only after agreement is reached between the State Electricity Commission, the Soil Conservation Authority, and the Falls Creek Tourist Area Management Committee
- (v) if, in the future, part or whole of the area is no longer required by the State Electricity Commission, consideration be given to adding the area to the Bogong National Park (Recommendation A2)

and that the area remain under Crown grant and be managed by the State Electricity Commission of Victoria.

Notes :

1. The National Parks Service should be consulted regarding any proposals that would affect the management of the adjacent park or the nature conservation, landscape, or recreation values of the area covered by Recommendation F1.
2. An area of importance to the operation, maintenance, and protection of the Kiewa hydroelectric scheme (shown by diagonal stripes on Map B) lies outside the area covered by Recommendation F1. Principles for the management of this area are set out in Recommendation A2 (*j*).
3. The acceptance of these recommendations would require a reduction in the amount of land currently held by the State Electricity Commission under a Crown grant.

Dartmouth hydroelectric scheme

The Dartmouth dam project began impounding water in November 1977 and will hold 3.77 million M1 at full supply level. The storage will be operated by the State Rivers and Water Supply Commission on behalf of the River Murray Commission and the water used primarily for irrigation. It will also generate hydroelectricity. The power station will have a generating capacity of 150 MW and will be sited just below the dam and upstream of a regulating dam and pondage. The regulating dam will be sited 9 km downstream and will impound 5,000 M1.

Electricity generated by the scheme will be transmitted by a 220 kV transmission line, which will be constructed to join the Mount Beauty terminal station. The route for this transmission line (shown on the maps) has been authorized by the government on the recommendations of a Parliamentary Public Works Committee. It passes through Granite Flat and along Rodda Creek, crosses the Eskdale Spur east of Mount Emu, and descends to Mountain Creek and Mount Beauty.

Recommendation

F2 That the area indicated on Map A occupied by the works and facilities associated with the operation of the Dartmouth hydroelectric scheme be used to :

(i) provide for the generation of electricity and its transmission to Mount Beauty terminal station

(ii) regulate water used in the generation of electricity

and be managed by the State Electricity Commission of Victoria and the State Rivers and Water Supply Commission.

G. HISTORIC AREAS

Sites of historical importance associated with exploration, pastoral and timber activities, and the exploitation of gold and other minerals are found throughout the alpine region. Five historic areas are recommended—four are associated with historical gold-fields and the fifth contains the remnants of a hydroelectric power station that supplied power to mine and process gold-bearing ores. The five contain features that illustrate the different forms of mining and processing, and provide an insight into the life styles, customs, and aspirations of the early prospectors. They include the sites of former townships, mine buildings, and dwellings, as well as the remnants of mining equipment, shafts, tunnels, and water races.

Council believes that historic areas should be managed to promote public awareness of the history of gold-mining and settlement of the land. Many other sites containing historical features occur throughout the alpine area, but are widely dispersed and relatively isolated, so it is not proposed that they be specifically reserved. They should, however, be catalogued and investigated and those having historical significance should be protected.

Recommendations

G1-G5 That the areas listed below be used to :

- (a) provide opportunities for recreation and education associated with the enjoyment and understanding of their history
 - (b) protect the sites and the remnants of buildings, equipment, construction works, and artifacts associated with the history of the locality
- that
- (c) mineral exploration and mining be permitted in accordance with the policy set out in chapter R, Mineral and Stone Production where it does not conflict with (a) above.
 - (d) fossicking be permitted using methods approved by the managing authority where this does not conflict with (a) above
 - (e) harvesting of timber not be permitted except in G2 (see note 3 below)
 - (f) apiculture and grazing be permitted

and that the areas be permanently reserved under section 14 of the *Land Act* 1958, with G1 managed by the Forests Commission and the remainder managed by the National Parks Service.

Notes :

1. Management of the areas should be in consultation with the Department of Minerals and Energy.
2. Management of G4 should be in consultation with the Shire of Omeo.
3. Subject to thorough investigation and establishment of the location of historic features within G2, timber harvesting and subsequent regeneration could be permitted where this does not conflict with the object of preservation and management of the area as an historic area.

G1 Howqua Hills (1,300 ha)

This historic area covers part of the former "Howqua" grazing run, which was taken up in 1845 and later subdivided into "Goulburn Downs" and "Howqua Hills". Pastoral activities in the valley of the Howqua River were followed by alluvial gold-mining in the mid to late 1860s. With the later discovery of auriferous reefs and the subsequent workings by companies such as the Mountain Chief, Howqua United, and Great Rand, a small mining centre developed. The township of Howqua, situated on the banks of the Howqua River adjacent to the mining areas, was proclaimed in 1888.

Predictions of a prosperous future were never fully realized. Difficulties of processing the highly mineralized ore, coupled with low yields of gold, led to the cessation of mining and the decline of the population. Little or nothing remains today of the crushing batteries, water wheels, and smelting furnace that once operated. Still evident, however, is a tunnel cut through the spur at Tunnel Bend and a race that once diverted water from the Howqua River to operate one of the water wheels. The tall brick chimney of the smelting furnace remains. Fry's Hut, although of more recent origin, is a popular attraction.

G2 Grant (7,300 ha)

Gold was first discovered at Crooked River in 1860 by Alfred Howitt and his party of government prospectors. Resulting from these alluvial discoveries, the area was rushed and by the early 1860s the townships of Bulltown and Hogtown had developed and most creeks in the area were being prospected. By 1864 the Crooked River field was languishing; but the discovery of a large number of exceedingly rich quartz reefs—the first discovery is accorded to Angus Macmillan—caused renewed interest, and the establishment of the townships of Grant, Talbotville, and Howittville followed.

Exploitation of the Grant and Crooked River reefs was initially rapid and gold yields were high, but after 1859 returns were small and the townships slowly declined. Grant, a typical "boom and bust" township with a population large enough to support 18 hotels, had only 2 hotels in 1890 and by 1914 had ceased to exist.

G3 Victoria Falls (100 ha)

The Cassilis Company's hydroelectric power scheme was located on the Victoria and Cobungra Rivers for the purpose of providing electricity to the mine and treatment works in Powers Gully near Cassilis (see G5). A dam constructed on the Victoria River supplied water by race to a pressure dam located on a spur immediately above the power station on the Cobungra River. From the power station, the transmission line extended 27 km to the mine and works. Groundwork for the scheme commenced late in 1906, and it was operational in 1909—the first such scheme in Victoria.

G4 Oriental Claims (40 ha)

The Oriental Claims, approximately 2 km south of Omeo, is the site of large deposits of gold-bearing alluvium worked by a series of prospectors and companies between 1856 and 1904. The deposits, about 30 m deep, are thought to occupy the bed of an ancient mountain lake and are auriferous for almost the complete depth.

At first, sluicing operations at the Oriental Claims and nearby Bloomfields Gully were carried out by cradle. By 1873, mines were using hydraulic hoses to break down the wash-dirt, with a head of water brought by race down the valley of Livingstone Creek. This practice virtually ceased in 1904, when the Sludge Abatement Board prevented the discharge of tailings and sludge into Livingstone Creek.

Exposed cliff faces up to 30 m high, showing deposition strata, and a pondage area are all that remain of these early gold-mining ventures.

G5 Cassilis (3,620 ha)

This area adjoins the existing townships of Cassilis and Tongio West and includes the site of the first quartz reef discovered in Gippsland. The gold-bearing ore was found to be highly mineralized and required a series of treatments including crushing, reduction, and roasting to ensure high yields.

The Cassilis company carted ore along a gravity-operated tramway from mines on top of the range to a battery and treatment plant situated in Powers Gully. The plant, fuelled initially by timber and then by oil, was converted to electricity in 1909. Power was supplied by the hydroelectric generating plant constructed at Victoria Falls, with substantial savings due to the more efficient use of machinery, increased output, and reduced fuel costs.

A gold-sluicing company built the Jirnkee water race, which brought water 90 km from the head of the Wentworth River to the sluicing works at Tongio West.

Two of the richest mines, the Cassilis and the King Cassilis, are covered by current mining leases and are worked intermittently.

H. EDUCATION AREAS

Environmental education is a fundamental step in the conservation of natural resources ; it has become an important part of school curricula, and forms the basis of courses for tertiary and adult students.

Environmental education must include field studies. It is concerned with studying and appreciating all sorts of environments—natural ones undisturbed by Man's activities, natural ones manipulated to produce particular products such as hardwood timber, or drastically altered ones such as are found in urban and agricultural areas. One of its basic requirements is access to land.

Council, realizing that public land provides excellent opportunities for studies of a wide range of environments, has recommended that almost all public land be available for educational uses. Council believes that in most situations educational studies can take place without conflicting with the primary use for which an area is set aside. Indeed in some cases it is manipulation of the land for the primary use that makes the area of value for such studies. Council believes, however, that it is necessary for some relatively undisturbed land to be set aside specifically for education uses as, unless this is consciously done, such environments will tend to be changed by other uses. In these areas education would be the primary use and other uses would only be permitted when not in conflict with it. Activities permitted in the education areas that may not be appropriate elsewhere would include long-term studies, collection of biological material, biomass studies, and the establishment of growth plots.

In selecting land for inclusion in the education areas, the Council has sought to provide areas :

- * giving examples of major land types
- * with maximum diversity of vegetation type, soils, etc., and with natural boundaries
- * located with consideration of ready access by users
- * located so as to minimize the danger that wildfires present to users
- * located in proximity to other land types and to a variety of other land uses
- * large enough to prevent over-use and to allow for zoning to protect areas of special value
- * selected so as to minimize erosion and pollution hazard

No one organization should have exclusive right to use a particular education area, as it is important that students have the opportunity to visit a number of education areas in various land types throughout the State rather than visiting one site several times. Minimum facilities such as toilets and shelters would be required for each separate area. It would be desirable to have accommodation facilities either on the areas or nearby. Whether or not they are located on an area will depend on its proximity to other areas of educational value in the region and also on the availability and location of existing accommodation. In forested areas, permanent facilities should only be provided where adequate safeguards against fire can be made.

Council believes that the land management of each separate education area should be the responsibility of the authority managing the adjacent or surrounding public land, while the Ministry for Conservation (in consultation with representatives of the Education Department, other user organizations, and the land manager) should be responsible for implementing educational aspects, and for co-ordinating use of the areas.

Recommendations

H1-H4 That the areas of public land listed below and shown on the map be used to provide opportunities for students of all ages to :

- (a) study the nature and functioning of reasonably natural ecosystems in a manner such that the integrity of these ecosystems is maintained as far as is practicable
- (b) compare the ecosystems within the education area with other nearby natural and modified systems
- (c) observe and practise methods of environmental analysis, and the field techniques of the natural sciences
- (d) conduct simple long-term experiments aimed at giving an understanding of the changes occurring in an area with time

and that they be permanently reserved under section 14 of the *Land Act* 1958 and managed by the Forests Commission.

H1 Delatite (450 ha)

Middle to Upper Devonian hornblende granodiorite and metamorphics, Upper Devonian conglomerate and rhyolite ; hilly ; elevation 510-1,000 m ; average annual rainfall 1,000-1,400 mm ; open forest II broad-leaf peppermint, open forest III narrow-leaf peppermint, open forest IV alpine ash.

H2 Mount Russell (220 ha)

Middle to Upper Devonian hornblende granodiorite, mountainous ; elevation 600-1,200 m ; average annual rainfall 1,200-1,400 mm ; open forest IV alpine ash, open forest III messmate stringybark and narrow-leaf peppermint.

H3 Mount Tamboritha (320 ha)

Upper Devonian-Lower Carboniferous sediments, Upper Devonian rhyolite ; mountainous, moderate slopes ; elevation 1,000-1,500 m ; approximate annual rainfall 1,000-1,200 mm ; sub-alpine woodland snow gum, open forest IV alpine ash, open forest III messmate stringybark.

H4 Sunnyside (310 ha)

Ordovician-Devonian granite, Ordovician schist ; mountainous, steep to moderate slopes ; elevation 1,000-1,720 m ; approximate annual rainfall 1,400 mm ; sub-alpine woodland snow gum, open forest IV alpine ash.

I. HARDWOOD TIMBER PRODUCTION

The Alpine area is an important source of hardwood sawlogs ; it produces nearly one-third of Victoria's output from public land.

Sawn timber from ash-type eucalypts (alpine ash and mountain ash) constitutes about 67 per cent. of output and other eucalypt species contribute about 33 per cent. Alpine ash is the major timber species. Mountain ash forests cover only relatively small areas at several scattered locations in the southern part of the area, and mixed-species forests are generally less productive.

This area yields about 22 per cent. of Victoria's production of green scantling for house framing—sawn from both ash-type and other eucalypt species. More importantly, it provides about 85 per cent. of Victoria's production of seasoning-quality hardwood timber, which is extensively used for various joinery items, lining, and furniture. Ash-type eucalypts are virtually the only Victorian source of this hardwood, and continued output will depend largely on the supply of good-quality logs from mature ash forests, and from regrowth ash forests where trees have reached a suitable size. The Alpine and Melbourne areas contain more than 93 per cent. of all ash regrowth forests, in the proportions of one-third and two-thirds respectively.

Advanced fire-regrowth forests of alpine ash, most of which originated after the 1939 fires, comprise trees that could begin to yield a proportion of seasoning-quality timber at about 50 years of age. It is envisaged that logging of these regrowth stands would begin at about this age and continue over approximately the next 80 years. Thus, the age of these forests at the time of felling would range from 50 to about 130 years.

The ability of sawmills, which presently operate on supplies of mature ash, to continue producing seasoning-quality timber will depend upon their success in securing rights to regrowth forests as the supply of good-quality logs from mature forests decreases.

At present, 38 sawmills, employing directly about 1,000 persons, draw the whole or part of their timber supplies from the study area. Associated with some mills are processing and manufacturing works located nearby or at centres such as Benalla, Bairnsdale, Seymour, Wodonga, and Melbourne.

Irrespective of any recommendations made by Council, it is evident that some mills will not be able to continue indefinitely to produce seasoning-quality timber at present levels. This inability is due to the combined effect of the limited supplies of mature ash and the geographic distribution of the ash forests. The location of regrowth forests in relation to the existing mills is also important. Consequently some restructuring of the industry appears inevitable. A number of options exist. Some sawmillers may choose to reduce their cuts ; others may apply for a higher proportion of scantling-grade timber or for rights to the softwood timber resource where softwood plantations lie within an economic distance.

It is also apparent, however, that some mills have good prospects for a continuous life based on production of seasoning-quality hardwood. By recommending large areas for timber production and placing other areas into the uncommitted category, in which logging is permitted, the Council has endeavoured to maintain options for the continuous operation of existing mills where this is possible.

Availability of hardwood resources

The Council recognizes the importance of timber production based on the Alpine area. Alpine ash and other ash-type species are the most valuable source of timber to the industry. Forests of these species fall into one of two main resource categories—mature ash, and regrowth ash that has resulted from wildfires occurring since the 1920s and from past logging.

Of that part of the Alpine area covered by mature stands, 52 per cent. lies within areas designated for timber production (Recommendations I1 to I12), 13 per cent. is in uncommitted land (Recommendation U1), and 5 per cent. is in once-only logging areas delineated in parks and similar reserves. Thus the recommendations make a total of 70 per cent. of the area covered by mature stands available to the timber industry.

Decisions regarding the use of two areas, one in the East Kiewa Valley and the other in the Murray River headwaters, are to be deferred until Council reviews land use for them (see Recommendations U2 and U3). The mature ash in these two localities comprises a further 5 per cent. of the total mature resource.

Regrowth ash is an important potential resource. Of its total extent in the Alpine area 71 per cent. (by area) has been made available for logging under Recommendations I1–I12 and U1 (Uncommitted land).

The hardwood production area also includes some sections of productive forest with significant landscapes, historic, recreation, or conservation values. Constraints are therefore imposed in some cases, and the Council has defined particular non-timber values that must be protected. Council endorses the practice adopted by the Forests Commission of preparing detailed management plans for public lands placed under its control. The plans prescribe by maps and text the detailed implementation of the approved land uses.

For any forest operations in the Alpine area, whether in a hardwood production area, in uncommitted land, or in stands designated for once-only logging operations, a set of principles has been formulated (see below) to provide guidelines. The principles are based on logging prescriptions used by the Forests Commission.

Timber resource in parks

Stands of mature and regrowth ash occur in recommended national parks and other conservation reserves. Many of these timber stands are remote, inaccessible, or located on very steep slopes with high soil erosion hazard, and are considered to be uneconomic to log. Some stands, however, are included because of their high conservation and scenic values and these will be reserved from logging.

Once-only logging

Council considers that long-term logging is not compatible with the main uses proposed for some conservation areas or appropriate in national or State parks. In order to cause minimum disruption to the industry, however, Council has recommended that once-only logging take place in some such localities where, although in the long term it is considered desirable to exclude logging, the timber resources they contain are essential to maintain supplies in the short term. Council has recommended that logging of these areas should be completed by 1988, but every effort should be made by the Forests Commission to ensure that timber production from these areas is completed before this date.

Review areas

For part of the East Kiewa valley, it is proposed that a decision regarding the logging of the mature ash resource be deferred until 1986 (see Recommendation U2). At another locality in the headwaters of the Murray River adjacent to the Kosciusko National Park, where both timber values and values incompatible with timber harvesting are high, the Council has recommended that no logging take place or logging roads be constructed pending its review of land use in the study area (see Recommendation U3). In the latter case the Council believes that sufficient alternative supplies exist to sustain the present level of logging in the general area until this review in about 10 years' time.

Pulpwood

Council considers that production of hardwood sawlogs should continue to be the primary goal in harvesting operations and that pulpwood should be obtained only as a by-product from sawlog operations, except for pulpwood cut in the course of salvage operations or silvicultural treatments such as thinning.

This means that, in most cases, pulpwood would be obtained from the same site as sawlogs. As forest operations such as roading, felling, snagging, and regeneration treatment are common to both sawlog and pulpwood procurement, the main difference between sawlog and integrated harvesting is the removal from the site of sawlog residues (which otherwise would have been burnt or left to decay) and some additional trees unsuitable for sawlogs. The Council considers that the principles for forest operations outlined below should apply to integrated operations as well as to areas from which sawlogs only are harvested.

At present, parts of the Alpine area are used to provide Australian Paper Manufacturers (A.P.M.) with wood for its pulp and paper mill at Maryvale. In 1976-77 the forests of the study area contributed 33,000 m³ of pulpwood obtained from integrated sawlog-pulpwood operations. This represents 9 per cent. of the minimum annual supply required to be made available to the company under the *Forests (Wood Pulp) Agreements Act 1974*. An important additional source of supply is chipped residues from sawmills drawing supplies from the area. In 1976-77 this amounted to 81,000 m³.

Substantially larger supplies of pulpwood would be needed in the future from forests south of the Great Dividing Range to fulfil supply commitments under the *Act*.

Principles for forest operations

Most public land in the Alpine area is already included in the proclaimed catchments of Lakes Hume, Eildon, and Glenmaggie and of the upper Kiewa and Nicholson Rivers. Council intends to proclaim the remaining catchments in order to protect them. The Soil Conservation Authority will then, after consultation with the Council, prepare land use determinations for implementation.

The land use determination will have special regard for high-altitude catchments. It is considered that these determinations in combination with the prescriptions agreed upon by the Soil Conservation Authority and the Forests Commission, and the principles set out below, should adequately protect soils and water catchments as well as specific scenic, recreation, and nature conservation values.

1. Soil conservation and catchment protection

- * Adequate filter strips along major and minor streams should be reserved from logging and other operations involving soil disturbance, where appropriate, and should, as far as practicable, be protected from fire.
- * Spur roads and snig tracks, log landings, and dumps should be designed and constructed to minimize potential erosion. These should be drained, breached, and barred when not required, and revegetation should be encouraged.
- * Intensive utilization operations should be subject to specific constraints, or excluded, on areas of high erosion hazard, especially on slopes generally greater than 30°.
- * Logging roads should be designed, constructed, and maintained so as to minimize erosion potential ; there should be an adequate number of culverts, and drainage water should be dispersed ; batters should be sloped so as to prevent land slips.
- * Except in some mixed-species forests at lower elevations, logging operations should be restricted during winter and periods of heavy rainfall ; consideration should be given to closing unsurfaced logging roads during these periods.
- * Plans for forest roading and harvesting operations should be discussed between the Forests Commission and the Soil Conservation Authority prior to implementation, so that the two organizations can achieve the aims outlined in the first four principles above.
- * Fuel dumps and logging camps should not be sited immediately adjacent to streams ; adequate provision should be made for the disposal of wastes from these sites.

2. Recreation and aesthetics

- * Special consideration should be given to road location, size and shape of logging coupes, and other forest operations in areas of high landscape value.
- * Specific prescriptions should be applied to logging near major tourist roads and walking tracks.
- * All refuse associated with logging operations (such as tyres, drums, and disused huts) should be removed at the end of the operations.
- * Logging roads, if not required for management, protection, recreation, or other use, should be encouraged to revegetate after utilization ceases.
- * Buffer areas around popular recreation sites and beauty spots should be reserved from logging.

3. Nature conservation

- * Prescriptions for logging (including size and scheduling of coupes) should provide for the protection of plant or animal species that have special scientific values.
- * All logged areas should be regenerated with forest tree species native to the area.
- * Some mature and veteran trees in logging areas should be retained for fauna habitat.
- * Aerially applied pesticides and fertilizers should be used with caution ; no compounds that may significantly affect native animals should be used ; any compounds should be carefully applied so as to avoid damage to retained vegetation.

4. Historic sites

- * Sites of historical significance or interest (such as cattlemen's huts or relics of mining or early settlement) should be identified, and the sites and their environs should be protected by special prescriptions.
- * When historical sites are identified, the desirability or otherwise of providing or upgrading vehicular access to each one should be considered when logging roads are being designed.

Recommendations

II-II2 That the areas listed below and shown on the map be used :

- (a) primarily to produce hardwood timber in a manner having due regard for landscape values as seen from the main roads outside the forest

that

- (b) major secondary uses be to :

- (i) provide opportunities for open-space recreation (including hunting) and education
- (ii) conserve native plants and animals, and provide opportunities for the development of wildlife conservation techniques
- (iii) produce honey, forage, gravel, sand, and other forest produce as defined in the *Forests Act* 1958

- (c) water production values be recognized and protected

- (d) particular values as listed below be protected by the implementation of management prescriptions (prepared, in the case of fauna, in consultation with the Fisheries and Wildlife Division)

and that the areas remain or become reserved forest under the provisions of the *Forests Act* and be managed by the Forests Commission.

Note :

See chapters A, D (D4 and D7), and O (O7) for recommendations on areas to be used for timber production on a once-only basis, and chapter U, Uncommitted Land, for areas for which deferral of the decision on their availability for timber production is recommended.

II Barkly-Goulburn (57,100 ha)

Also recommended is an extension of this area south-west into uncommitted land in the Melbourne area (12,200 ha).

In accordance with (d) above, the following values should be protected :

- * sensitive components of distinctive landscapes seen from important viewing points such as Mount MacDonald
- * environs of the Alpine Walking Track and the Barkly River
- * environs of McEvoys and McMillans Tracks, mining relics that belong to the Crown and sites associated with early mining in the Upper Goulburn and Aberfeldy catchments, environs of cattlemen's huts
- * several rare species of frogs recorded in the upper Goulburn River and its tributaries ; *Boronia citriodora* near S.O.B. Spur

I2 Howqua-King (30,000 ha)

In accordance with (d) above, the following values should be protected :

- * sensitive components of distinctive landscapes seen from important viewing points such as Mounts Buller and Magdala and the Bluff
- * environs of the Howqua River walking track, waterfalls on Falls and Currajung Creeks
- * timber tramlines at Plain Creek and environs of cattlemen's huts

I3 Carey River (14,000 ha)

In accordance with (d) above, the following values should be protected :

- * sensitive components of distinctive landscapes seen from important viewing points such as the Sentinels and Snowy Bluff
- * manna gum forests along the Carey River
- * environs of McMillans Track

I4 Selwyn-Tea Tree (44,700 ha)

Also recommended is an extension of this area north into uncommitted land in the North-Eastern Area, Districts 3, 4, and 5 (3,800 ha).

In accordance with (d) above, the following values should be protected :

- * sensitive components of distinctive landscapes seen from important viewing points such as Mounts Darling, Sarah, and Murray and the Blue Rag Range
- * environs of the Alpine Walking Track

I5 Mount Ewen (25,200 ha)

In accordance with (d) above, the following values should be protected :

- * the environs of McMillans Track, relics that belong to the Crown, and sites associated with early mining on the Crooked River gold-fields

I6 Baldhead-Phipps (41,100 ha)

In accordance with (d) above, the following values should be protected :

- * Dargo-Omeo mining track, Jirnkee water race, relics that belong to the Crown, and sites associated with early mining around the old township of Brookville and in the Haunted Stream ; old sawmill site and tramway near Mount Baldhead.
- * herbfield and adjacent alpine ash environs at Mount Baldhead ; herbfields, heathland, black sallee woodland, and adjacent alpine ash environs at Mount Delusion
- * *Sticherus flabellatus* in the Pheasant Creek headwaters

I7 Snowy Creek-the Knocker (45,200 ha)

In accordance with (d) above, the following values should be protected :

- * sensitive components of distinctive landscapes seen from important viewing points such as Mount Wills and Granite Peak
- * environs of the Alpine Walking Track and the Dartmouth storage ; waterfalls on Wye Creek

- * Lightning Creek–Mitta Mitta and Sunnyside water races ; relics that belong to the Crown and sites associated with early mining around Sunnyside, Lightning Creek, and Nine Mile Creek ; old sawmill site near Mount Wills
- * fern gullies in the headwaters of Trappers Creek and Snowy Creek (west branch)

I8 Pinnibar–Pendergast (107,400 ha)

In accordance with (d) above, the following values should be protected :

- * sensitive components of distinctive landscapes seen from important viewing points such as Mounts Sassafras, Gibbo, and Pinnibar and Davies Plain Ridge
- * environs of the Alpine Walking Track, Dartmouth storage, and Gibbo and Buenba Rivers
- * relics that belong to the Crown and sites associated with early mining at Saltpetre Creek, Pheasant Creek, Zulu Creek, Surveyors Creek, and Mount Murphy ; Gibb sawmill site
- * *Acacia dallachiana* at Dinner Creek, and riverine forests along Omeo Creek flats

I9 Beloka Range (4,100 ha)

No specific sites or values.

I10 Splitters Range (7,300 ha)

No specific sites or values.

I11 Nunniong–Timbarra (74,400 ha)

In accordance with (d) above, the following values should be protected :

- * early settlement site at Glenmore ; relics of early logging near Mount Nugong
- * waterfalls and gorges on the Timbarra River
- * *Deyeuxia microseta* at Upper Frying Pan Creek ; *D. parviseta* at Upper Blue Shirt Creek ; *Leucopogon pilifer* in the headwaters of Timbarra River and Blue Shirt Creek ; *Pterostylis aestivalis* near Ensay ; *Thesium australe* at Gillingall
- * Mossbed Lake and numerous sub-alpine plains such as Joe, Mundy, Pig, Paddy, and Blue Shirt Plains ; gullies containing montane closed forest beside the main Bindi–Mount Nugong and Ensay North–Mount Nugong roads

I12 Black Satin Creek (4,800 ha)

No specific sites or values.

J. WILDLIFE

Wildlife conservation—a land use in its own right—cannot always be separated from other land uses such as timber production, forest grazing, water production, and recreation. These types of use often require large areas of land, much of which can be managed to retain its value as wildlife habitat. In the long term, wildlife conservation depends upon conservation of habitat covering areas that are sufficiently large and diverse to support genetically viable populations of species.

Animal habitats are generally described in terms of vegetation communities, although other characteristics—such as vegetation structure, ground cover, water depth, salinity, rock outcrops, and hollow trees—are also important. In the alpine area, the vegetation communities adopted for habitat types range from alpine herbfields, grasslands, heathlands, and mosslands to snow gum woodlands and montane, foothill, and riverine forests. Aquatic habitats, particularly those associated with mountain streams and rivers, are a feature of the area ; however, there are few lakes and swamplands. Rocky Valley Dam and the huge Dartmouth Reservoir are the only large artificial lakes in the area.

The vegetation map of the alpine area illustrates the diversity of habitats and shows that no single community covers an extensive uninterrupted area, but rather that each community or habitat tends to be repeated over a wide area as parts of a complex mosaic. This pattern is largely determined by the diversity of climate, soils, physiography, and aspect.

The distribution of an animal species depends on its behavioural and physical requirements for food, shelter, and breeding sites. Many species can utilize a range of habitats and consequently are widely distributed throughout the area. Some occupy their environmental range as residents. Others, such as certain bird species, are not year-round residents but migrate in and out of the area at regular intervals. Other birds visit the area infrequently in nomadic movements, while yet other species move between high and low altitudes with the seasons. It is obvious therefore that the conservation of fauna presents many difficulties, even for those relatively few species whose life history and behaviour is understood.

Council considers that the Fisheries and Wildlife Division has an important role in the management of the entire area and, by working in close co-operation with the managing authority in the formulation of management plans, should ensure that provision is made for the conservation of wildlife. This is especially important for animals that are closely restricted to a particular habitat for feeding and breeding. The mountain pigmy possum, found in alpine heathlands and sub-alpine woodlands, and the brush-tailed rock wallaby found among rocky outcrops in dry open forest are two such examples. They have been mentioned specifically in the recommendations relating to the areas in which they are known to occur.

The activities of Man in modifying the natural environment have resulted in changes in the distribution and abundance of many species and some species have become extinct. These effects have depended upon the nature and severity of the modification, the particular habitat requirements of the species, and its adaptability to change.

The precise effects on many species, however, are not well documented. The Council has recommended elsewhere in this report that principles relating to the conservation of fauna be adopted for land uses that could significantly affect wildlife values. The Council considers that further research into the ecological requirements of species is necessary to determine the effects of various land management practices, particularly those where management is oriented towards more competitive uses such as timber production, forest grazing, and intensive recreation. The results of such research may mean the modification of management practices in some areas if wildlife values are to be adequately considered.

Recommendations

- J1** That the authorities managing public land co-operate with the Fisheries and Wildlife Division in the development of research and management policies for the conservation of wildlife values.
- J2** That the Fisheries and Wildlife Division prepare management plans in consultation with the managing authority to ensure that wildlife values are fully considered when management policies and prescriptions are formulated and implemented.

Note :

There are specific recommendations and references to wildlife values in other chapters such as Natural Features and Scenic Reserves, Hardwood Timber Production, Water and Hydroelectricity Production, Recreation, and Parks.

K. FLORA AND FAUNA RESERVE

The isolated block of public land described below contains flora and fauna communities in a near-natural state.

Recommendation

K1 Morass Creek

That the area of 22 ha adjoining allotments 4C and 15 of section 11, Parish of Hinno-Munjie, indicated on the map be used to conserve native plants and animals. and that it be permanently reserved under section 14 of the *Land Act* 1958 and managed by the Department of Crown Lands and Survey.

L. BUSHLAND RESERVES

Throughout the predominantly agricultural regions, a number of relatively small areas of public land carry remnants of native vegetation. This vegetation, particularly the ground flora, has often been modified from the original by grazing and invasion of weeds. The native tree species still remain, however, and these areas provide landscape diversity, particularly where more intensive agriculture is resulting in a gradual reduction in the numbers of trees on freehold land.

The Council recommends that a number of these small remnants of the native vegetation should become bushland reserves. Their major uses are to maintain the distinctive Australian character of the countryside and to provide diversity in the landscape. They may also provide some opportunities for passive recreation in relatively natural surroundings. The areas are generally too small to be significant for fauna conservation, although some may be important for migratory birds.

Management should aim at the maintenance of the native flora, particularly the tree species. Low-intensity grazing, timber production, and gravel extraction are not necessarily incompatible with this primary aim, provided they are carefully planned and controlled and do not spoil the appearance of the reserves, particularly as viewed from roads and look-out points. These uses may not be appropriate to all reserves, however, and the management authority may have to exclude them from some, at least temporarily, in order to permit regeneration of tree species.

Recommendations

L1-L8 That the areas indicated on the maps and described below be used to :

- (a) maintain the local character and quality of the landscape
- (b) provide opportunities for passive recreation such as picnicking and walking that
- (c) expansion of any existing facilities or new development be permitted only where this does not conflict with the primary aim

and that they be permanently reserved under section 14 of the *Land Act* 1958, and be managed as indicated in the schedule below.

- L1** 12 ha, being allotment 28A, Parish of Bundara-Munjie—to be managed by the Department of Crown Lands and Survey.
- L2** 23 ha, being the camping and watering reserve north of allotment 108 and the gravel reserve adjacent to allotment 100, Parish of Cobungra—to be managed by the Department of Crown Lands and Survey.
- L3** 15 ha, being allotment 6 of section 1, Parish of Terlite-Munjie—to be managed by the Department of Crown Lands and Survey.
- L4** 10 ha, being allotments 22E and 22B of section 8, Parish of Tongio-Munjie West—to be managed by the Department of Crown Lands and Survey.

- L5 8 ha, being allotment 19A of section B, Parish of Chilpin—to be managed by the Forests Commission.
- L6 36 ha adjacent to allotment 20 of section B, Parish of Chilpin—to be managed by the Forests Commission.
- L7 20 ha north of allotment 6B, Parish of Gelantipy West—to be managed by the Forests Commission.
- L8 12 ha adjacent to allotment 32, Parish of Detarka—to be managed by the Forests Commission.

M. RIVERS AND STREAMS

PUBLIC-LAND WATER FRONTAGES

Along a number of rivers and streams in the study area, a strip of public land has been reserved between the water and adjacent public land or alienated land. No public land strip adjoins land alienated before 1881, and some properties in the study area have titles that extend to the banks or even incorporate the bed and banks of a stream.

Thus some streams and rivers have either no public-land water frontage or a discontinuous one. The recommendations that follow do not apply to privately owned frontages.

The locations of public-land water frontages are shown on parish plans, which are available to the public from the Central Plan Office in the Department of Crown Lands and Survey. These frontages may have a surveyed boundary of short irregular lines or be of a specified width (varying in particular instances from 20 m to 60 m) along each bank. In some cases this land has been reserved for public purposes under the *Land Act* 1958 and in others it is unreserved. The land usually comes under the control of the Department of Crown Lands and Survey, while in all cases the State Rivers and Water Supply Commission controls the water.

Each of these authorities may delegate some of its responsibility to local bodies. The Department of Crown Lands and Survey may form committees of management for public purposes, while river improvement or drainage trusts under the guidance of the State Rivers and Water Supply Commission may be formed in certain areas. The Forests Commission controls forest produce on public-land water frontages, except where a committee of management has been formed. Public-land frontages alongside artificial water storages and aqueducts are often controlled by the water supply authority that controls the water.

Adjoining occupiers often hold public-land water frontages under licence for grazing purposes. Special conditions may apply to the licences—for example, to permit cultivation. The licence system has advantages in that licence-holders are required to control noxious weeds and vermin on the frontage. This control would be extremely difficult and expensive to achieve in any other way. When a frontage is held under licence, boundary fences are normally extended to the water's edge, and legal public use is limited to through travel. The licensee often discourages public access because of an understandable fear of damage, intentional or otherwise, to his property. Vandalism and littering are problems in many areas open to the public, and firm action by management authorities is often required. Control is obtained through the normal exercise of fire, litter, firearms, and other regulations, although it is evident that more effective policing is required, particularly at weekends. Education of the public to understand the rural environment is perhaps the best solution in the long run.

These licensed river frontages are, however, public land ; they are often valuable for low-intensity forms of recreation such as walking, fishing, and observing nature, and provide access to extensive lengths of streams and lake shores. As mentioned above, members of the public are legally entitled to walk through a licensed frontage. Licences for previously unlicensed public water frontages, now being issued by the Department

of Crown Lands and Survey, require the licensee to erect a stile or gate in any fence erected across the frontage, where appropriate, to facilitate public access. This condition has not been applied to the majority of existing licences and Council believes that in some situations—for example, along popular fishing streams—the provision of stiles would facilitate pedestrian access along public-land water frontages and would reduce damage to fences and avoid gates being left open.

Public-land frontages that are unlicensed have no restriction on public access, although use of vehicles is controlled by the *Land Conservation (Vehicle Control) Act 1973*. They are, however, normally fenced off from adjacent freehold land. The landholder has no obligation to provide access through freehold land to the frontage, and nothing in these recommendations suggest that this situation should change.

The maintenance of a vegetation cover along stream banks is important in preventing soil erosion and in preserving the local landscape. Public-land water frontages are sometimes valuable for nature conservation as well, as they may provide corridors for movement of nomadic and migratory species, or support native plants and animals that are no longer found in surrounding areas. In too many cases, however, the provisions of the relevant Acts have not been enforced effectively, and such public-land water frontages have been progressively cleared of native vegetation.

Public-land water frontage reserves

Water frontage reserves are defined for the purposes of these recommendations as being all existing water frontages and other reserves or unreserved public land adjoining streams—except for those areas, not currently reserved as a water frontage, that have been set aside elsewhere in these recommendations either as part of a large reserve (such as a national park or reserved forest) or for some special purpose (such as a flora, recreation, or streamside reserve).

Recommendation

M1 That the public-land water frontages

(a) be used to :

- (i) protect adjoining land from erosion by the maintenance of an adequate vegetation cover
- (ii) maintain the local character and quality of the landscape
- (iii) conserve native flora and fauna
- (iv) provide opportunities for low-intensity recreation
- (v) allow access to water and for grazing of stock by adjoining landholders under licence where appropriate

that

- (b) (i) where a licence has been issued for a public-land water frontage as in (a) (v) above, restricted recreation use by the public be permitted (non-damaging activities such as walking, nature observation, fishing, or just relaxing should be allowed, while potentially damaging activities such as camping, lighting fires, or using motor or motorized recreation vehicles should be prohibited)
- (ii) licensees be required to provide stiles in any fences erected across their licence area if requested to do so by the management authority

- (iii) cultivation not be permitted, except with the approval of the Department of Crown Lands and Survey, and that, in proclaimed water supply catchments, the Soil Conservation Authority be consulted to ensure that approval to cultivate is in accordance with land-use determinations affecting the water frontage made under the *Soil Conservation and Land Utilization Act 1958*
- (iv) in particular cases, licensees be required to fence off and exclude stock temporarily from some parts of the licence area where, in the opinion of the management authority, special measures are necessary to protect water supplies, to rehabilitate eroding areas, or to permit regeneration of native plants that have particular value for nature conservation

that

- (c) the Department of Crown Lands and Survey be consulted prior to the proclamation of roads, the construction of roadways, or the erection of buildings on public-land water frontages

and that

- (d) (i) public-land water frontages be permanently reserved under section 14 of the *Land Act 1958*
- (ii) where an area currently reserved as a water frontage is adjacent to or within a national or State park, or other reserve, it be managed by the authority responsible for the adjoining or surrounding land
- (iii) where it is not within or adjacent to a reserve or park as described in (d) (ii) above, it be managed by the Department of Crown Lands and Survey or by a committee of management where one is appointed.

RIVER IMPROVEMENT

River Improvement Trusts have been constituted under the *River Improvement Act 1958* for sections of the following rivers in the study area :

Kiewa River

Ovens River

Improvement works in these rivers are designed to maintain the carrying capacity (for water supply or drainage purposes), to protect adjoining land from flooding and erosion, to maintain the security of structures such as bridges on the flood plain, and to prevent siltation of the lower reaches by control of upstream erosion.

The works carried out include :

- * erosion-preventing works on the banks—for example, construction of wire-mesh fencing, planting of trees, the use of various materials for bank protection, and the felling of trees that may be undermined (to prevent loss of bank material)
- * clearance of waterways by removal of snags within the bed of the channel to maintain or improve discharge capacity
- * realignment and alteration of a stream by the use of wire-mesh fencing and log or concrete barriers

Such work is often made necessary by the changes that Man has made to land use in the river catchments and on the flood plain. The following changes have generally reduced the value of the rivers for nature conservation.

- * Clearing of vegetation has increased run-off and reduced time of concentration of storm flows. The situation is sometimes aggravated by overgrazing and unwise cultivation in the catchment and along the river banks, permitting soil erosion and transport of sediment to the stream. Increases in urban development—with disposal of storm water directly to streams—have also altered flow regimes.
- * Regulation of stream flow by water storages and use of streams to transport water for irrigation and domestic use also change the natural flow regime. For example, the Mitta Mitta River will be used to transport water from the Dartmouth Dam to the Hume Weir and will be required during infrequent drought periods to carry regulated flows up to bank-full capacity for several months during summer.
- * The construction of barriers such as road embankments and bridges, through which the river must pass, has often resulted in substantial modification of the bed and banks. Present policy, however, is that all proposed replacement or new structures across waterways, flood plains, and depressions are referred to the State Rivers and Water Supply Commission and to the River Improvement Trust, where one is involved, for approval.

River improvement authorities, in attempting to cope with the consequences of these changes, carry out works that sometimes adversely affect landscape and nature conservation values, but sometimes ultimately enhance these values.

Removal of snags from the centres of wide streams damages fish habitat, but the tethering of these snags against the banks may provide alternative fish habitat, as well as protecting the banks from erosion. Realigning and regrading of eroding beds and banks often removes holes and backwaters of value as fish habitat and for angling and swimming in a particular location. On the other hand, these operations, in preventing erosion, reduce transportation of silt.

River improvement works are sometimes aesthetically displeasing, particularly during construction and in the early stages after completion, but their ultimate aim is to prevent erosion and to allow re-establishment of vegetative cover along the stream banks. The construction of mesh fencing or log barriers frequently makes access to the river difficult, but is an integral part of preventing stream erosion.

River improvement trusts are at present limited in their responsibility under the *River Improvement Act 1958* to the stream environs within the districts under their control. They are therefore frequently able to treat only the symptoms of problems, as the causes may lie in the catchments beyond the area of their responsibility. Works that they carry out are often limited by lack of funds and frequently amount to little more than stop-gap measures. There is thus little opportunity in the design and implementation of works for consideration of their likely impact on areas outside the trusts' districts.

The flow regimes of some rivers must of course be modified and flood plains used for agriculture, but it is appropriate to look at the principles of the natural system in seeking solutions to the problems that thus arise rather than to move further from those principles.

The Council believes that the following principles should be applied in determining the need for and design of river improvement works.

- * Where problems in river management arise, the whole catchment should be considered in seeking a solution.

- * Works designed primarily for flood control should aim at reducing the rate of run-off of the catchment.
- * The degree to which minor flooding can be tolerated by the community should be determined in each case. It may often be more appropriate to take action to minimize the consequences of flooding than to attempt to prevent it.
- * An adequate vegetation cover should be maintained along stream frontages to stabilize the banks and to reduce the velocity of flood-waters as they leave and re-enter the stream course.
- * Structures such as road embankments and bridges on flood plains are a variation of the natural situation, and consideration should be given in their design to their effect on the flood pattern.
- * Works carried out within the bed and banks of a stream to change the alignment, gradient, or cross-section should be kept to the minimum necessary.
- * Consideration should be given in the design of works to maintaining or enhancing landscape values and the value of the stream for recreation and as a habitat for wildlife.

Recommendations

- M2** That the assessment of the need for, and the planning and implementation of, any works involving changes to the beds and banks of streams be based on the principles set out above.
- M3** That plans for all works (other than those of a minor nature), together with an assessment of their environmental consequences, be submitted to the *Standing Consultative Committee on River Improvement* for consideration prior to the commencement of works.
- M4** That detailed guidelines based on the principles set out above be prepared by the *Standing Consultative Committee on River Improvement* to ensure that an optimum balance is achieved between the purpose and implementation of works on the one hand, and the maintenance or enhancement of the stream's landscape values and its value as a habitat for wildlife and for recreation on the other.

Note :

The above-mentioned *Standing Consultative Committee on River Improvement* now in existence comprises representatives from the following :

- Ministry for Conservation
- Conservation Council of Victoria
- Soil Conservation Authority
- Fisheries and Wildlife Division
- Forests Commission
- Department of Crown Lands and Survey
- Association of Victoria River Improvement Trusts
- State Rivers and Water Supply Commission

STREAMSIDE RESERVES

Throughout the freehold regions of the alpine area, small blocks of public land adjoin streams but are not included in the public-land water frontage. Two of these blocks, one beside the alpine road adjacent to the Victoria River, the other adjacent to the Kiewa River north of Mount Beauty, have been designated as streamside reserves.

The management authority may provide facilities for activities such as camping on streamside reserves in areas where conflict with nature conservation values are minimal. Every effort should be made to encourage regeneration or restoration of the native vegetation.

Note :

Streamside reserves are separate and distinct from the public-land water frontages described previously in this chapter.

Recommendations

M5-M6 That the areas shown on the maps and described be used to:

- (a) provide passive recreation such as picnicking, walking, angling, and, where permitted by the managing authority, camping
- (b) conserve flora and fauna
- (c) provide grazing, at the discretion of the management authority, if this use does not conflict with the maintenance of the water quality of the adjacent streams or with (a) and (b)

and that they be reserved under section 14 of the *Land Act* 1958 and managed by the Department of Crown Lands and Survey.

M5 Victoria River

4 ha, being allotment 38D, Parish of Bundara-Munjie.

M6 Kiewa River

5 ha, bordering the Kiewa River and Mountain Creek, south of allotment 9 of section 6, Parish of Wermatong. (Note also, recommendation for adjacent area—R4.)

N. LAKE RESERVE

Lake Omeo

Lake Omeo lies in an internal drainage basin apparently formed by block-faulting, the movements damming back a tributary of Morass Creek.

The lake is filled by a few small streams—the main one being Minute Creek—in times of peak rainfall, and in 1975 was filled for the first time in 15 years. Water is lost primarily by evaporation, causing the lake to dry out within a few years unless sufficient rain falls. Proposals to keep the lake filled by diverting water from Morass Creek have never been pursued.

When water levels are suitable, the lake is frequented by waterfowl and is used for aquatic sports such as sailing and speed-boating.

The frontage to the lake, and the lake-bed itself when suitable, is used as a common for grazing stock. The south-eastern perimeter of the reserve is used as an airstrip.

Recommendation

N1 Lake Omeo

That the area of 758 ha shown on the map continue to be used according to its capabilities for a waterfowl feeding and resting area, low-intensity grazing, and water-based recreation

that

the south-eastern perimeter of the reserve be available for use as an airstrip and that it be reserved under section 14 of the *Land Act* 1958 and managed by the Department of Crown Lands and Survey.

O. RECREATION

The term recreation includes the multitude of different activities that people undertake during their leisure time. In fact, the distinguishing characteristic of recreation is not the activity itself so much as the attitude with which it is undertaken—activities (or inactivities) undertaken with little or no feeling of compulsion can be considered to be recreation.

Outdoor recreation is of particular interest to Council, as the public land of the area provides important opportunities for it. Throughout these recommendations reference is made to the various forms of outdoor recreation in a number of ways.

- * Formal recreation activities include all organized sports and other group activities, while activities such as picnicking, fishing, and hiking are grouped as informal.
- * Passive recreation covers situations where the individual obtains his recreation through absorbing the sights, sounds, and atmosphere of the surrounding environment while expending little physical effort. Examples are picnicking, nature observation, and strolling.
- * Active recreation covers situations where the individual must expend considerable physical effort to obtain some mastery of physical forces in order to satisfy his particular recreational needs. Examples are playing organized sport, bushwalking, and rock-climbing.
- * Open-space recreation includes all recreational activities that require spacious outdoor surroundings, whether the activities be active or passive, formal or informal.
- * Intensive recreation involves large numbers of people per unit area.

In view of the predicted increase in demand for outdoor recreation and the high capability of some public land to meet this demand, the Council, in its recommendations, has recognized that much public land should be available for recreational uses of some sort. Accordingly it has recommended a variety of uses within the Alpine area to provide for a wide range of recreational activities. Council could not, however, make recommendations covering in detail all the forms of recreation currently pursued there. These include activities such as bushwalking, rock-climbing, orienteering, canoeing, fishing, hunting, fossicking, picnicking, horse-riding, boating, trail-bike riding, and pleasure driving, including the use of four-wheel-drive vehicles. Council believes that, in some areas, activities such as these can be accommodated without detriment to other values. Consequently Council points out that outdoor recreation in general is an acceptable primary or secondary use of much public land (except for reference areas and some water storages and their buffers) and has left the details of recreational use to the land manager.

The various recreation activities differ in their requirements for types of land, size of area, and site location. They also differ in their impact on the land and on other activities (including other forms of recreation). Generally, any one activity pursued at a low level of intensity poses little threat to the environment and seldom conflicts with other activities. But conflicts and problems can arise with increasing intensity, particularly when one or more forms of recreation attract very large numbers of people or vehicles to small areas.

There is always the problems of recreation damaging the environment it seeks to use. Council therefore believes that the land managers should aim at controlling the levels and patterns of recreational use according to the capability of the area to sustain such use without significant conflict with the primary purpose of the area or significant environmental deterioration, while at the same time avoiding any unnecessary restrictions. Thus more stringent restrictions can be expected in areas where the vegetation and soils are sensitive to damage—such as in alpine, sub-alpine, and low-rainfall areas—and where the natural environment or special natural features are being preserved.

Some recreational activities, including camping, bushwalking, and ski-touring, are currently dispersed throughout the area and are undertaken without extensive development of facilities. Council believes, however, that where intensive recreational use occurs it may be necessary to provide special facilities to cope with larger numbers of people. For example, it will probably be necessary to provide camping facilities in designated areas such as Sheeppark Flat, Wrens Flat, Wellington River, Eagle Vale, Harrietville, Anglers Rest, Staleyville, Gibbo River, and Nariel. Picnicking facilities in some of the major tourist areas should also be provided.

Although suggesting that some areas be developed as camp sites, the Council considers that large areas should remain available for dispersed or bush camping. That is, in these areas users should be allowed to camp where they choose rather than be restricted to camping areas designated by the managing authority.

Five particular forms of recreation that may pose a problem for the land managers, whether now or in the future, are further discussed below.

Bushwalking

The alpine area, long recognized as an area of outstanding natural beauty, is one of the most popular destinations in Victoria for bushwalkers—particularly those planning trips of three or more days' duration. Bushwalkers who visit the area for shorter periods may plan an overnight camp or take one-day hikes and shorter walks. Many others, such as photographers, naturalists, fishermen, etc., pursue activities that include walking, but would not regard themselves as bushwalkers.

To make the best use of limited leisure time many walkers use conventional or four-wheel-drive vehicles to place themselves within reasonable walking distance of their objective.

The alpine area provides many opportunities for bushwalking as it contains an extensive network of walking routes, many sections of which offer a series of panoramic views of essentially natural landscapes. These sections are popular and valued highly, particularly those where no vehicular access has been constructed. The creation of the Tri-State Trail, which will extend through the Australian Alps from Walhalla in Victoria through to the Australian Capital Territory, has received much support from bushwalking groups. The Victorian sector, the Alpine Walking Track, is completed and provides an opportunity to view a variety of landscapes during a walking trip requiring some weeks to complete. As the track passes through areas recommended for a number of different uses, it will be necessary for land managers to give special attention to the protection of the environs of the Track.

In framing its recommendations, the Council has attempted to provide for the requirements of the significant and growing numbers of walkers who use the area, by recommending many areas where management will be oriented towards conservation (parks, natural features, and scenic reserves). It believes that the value of certain areas for walking can be enhanced by the provision of more walking tracks and marked routes and that the necessary funds should be made available. Such walking tracks and routes should provide access to and link sites of interest and scenic beauty and should be located away from roads used for motorized recreation. On the other hand some areas should be left undeveloped to provide for those bushwalkers who do not require defined walking tracks.

Motorized Recreation

Much outdoor recreation depends on motor vehicles. These may be conventional cars, four-wheel-drive vehicles, or motor-cycles. They may be used for touring and sightseeing, as a means of obtaining access to a particular area where other forms of recreation will be undertaken, or—when they are driven in competitive rallies or in adverse but challenging road conditions—as a source of recreation in themselves.

Most visitors to the alps use conventional two-wheel-drive vehicles and keep to the major through routes that in many cases have been upgraded for tourist purposes. Others use four-wheel-drive vehicles or motor-cycles to gain access to the more isolated areas via the secondary system of roads that supplement the major ones. This system was constructed mainly for timber harvesting, forest management, and fire protection, (although some roads were constructed in conjunction with the Kiewa hydroelectric scheme) and to provide access for mining and grazing. The roads are frequently rough and steep and have not been designed to cope with increasing use by recreation vehicles.

Consequently, even legal use of roads can pose maintenance problems for the land managers. Authorities responsible for their construction and maintenance on public land may close roads temporarily or permanently when traffic exceeds their physical capacity, for safety reasons, or when use by vehicles is in unacceptable conflict with the area's primary uses. Erosion hazard areas may be proclaimed according to the provisions of the *Land Conservation (Vehicle Control) Act 1972* and Regulations, enabling strict control to be enforced. Seasonal closure of many roads will continue to be necessary because of excessive damage, erosion, or cost of maintenance, and because of extreme fire hazard, irrespective of the way in which the area is used and the managing authority.

A number of four-wheel-drive clubs have acknowledged the need for restrictions on motorized recreation in certain areas and during some periods of the year, and generally support the use of existing legislation to control undesirable activities. Clubs also recognize the need to inform and educate participants in motorized recreation of the environmental consequences of improper use of four-wheel-drive vehicles. The management authorities should continue to promote responsible attitudes to the use of four-wheel-drive vehicles and trail-bikes.

A significant and growing proportion of the population is becoming involved in recreational touring, which depends on the use of roads on public land. Drivers of motor vehicles, including motor-cycles, who leave the roads on public land contravene the provisions of the above *Act*. (Limited exceptions are given in the *Act*.)

If the increased recreational use of roads is to be catered for, additional funds will be needed for road maintenance, otherwise the deterioration and resultant closure of a large number of roads is inevitable.

Because of its extensive network of roads, the alpine area is of particular value for motorized recreation, especially for touring by four-wheel-drive vehicles, and the Council has received many submissions from persons interested in the pursuit of activities based on the provision of access into isolated parts of the area.

The Council considers that there should continue to be a system of linked roads, mainly of four-wheel-drive standard, available for users of recreation vehicles so that trips from one part of the alps to another continue to be possible. In addition, consultation between management authorities and user groups should be maintained regarding the period of the year that roads can be used.

Deer-hunting

Deer-hunting is currently undertaken in much of the public land here using guns or bows and either with or without hounds. (Hounds are not used when stalking deer.) Under the *Wildlife (Game) Regulations* 1976, No. 2, hunting of Sambar deer with hounds is permitted year-round. Concern has been expressed about the use of hounds because of the possible killing and maiming of native animals and because hounds may become lost during the hunt and add to the wild-dog problem in the area. The extent of these problems is substantially unknown, and little research information is available. In areas where hunting is permitted, Council supports research by the Fisheries and Wildlife Division to assess different methods of hunting in order to determine their effects on the deer population and on native fauna, and the extent of conflicts with recreational and other users of the areas.

The Council has proposed that neither hunting nor the use of firearms be permitted in the Bogong, Cobberas-Tingaringy, and Snowy River National Parks. Hunting of deer by stalking (that is, without hounds) would be permitted seasonally in the Wonnangatta-Moroka National Park. The timing and duration of the season would be decided by the National Parks Service in consultation with the Fisheries and Wildlife Division.

For the bulk of the Alpine area, no restrictions on deer-hunting other than existing legal requirements are proposed.

Youth Camps

Some permanent camp sites used by scouts, schools, church groups, and the like occupy public land in the study area, and demand for new sites is continuing.

Users have generally preferred sites situated in pleasant bushland, close to a permanent stream, readily accessible by road, and in areas where the safety of the camp and its occupants can be ensured during periods of high fire danger. Such sites are relatively scarce and their use for youth camps is in direct competition with their use for less restrictive public activities, such as picnicking or general camping.

Camps on public land vary greatly—in the purpose for which they are constructed, in their standard of maintenance, and in the degree to which they are used. Some are designed to provide full accommodation, with campers living in huts that have electricity and hot water provided; others have only minimal facilities, with campers living in tents. Some have considerable amounts of money and volunteers' time and effort put into their construction and maintenance; others have been built and are maintained at very low standards. Some are used for much of the year, with the owner organization allowing use by other groups. Others are used only occasionally, and exclusively by one group.

User groups have an increasing tendency to acquire freehold land for their actual camp site, while using adjacent public land for their outdoor activities, and Council believes this trend should be encouraged. While recognizing that a variety of types of camps may be needed, Council believes that any camps permitted on public land should be properly located, constructed, and maintained. For efficient management of camps, it may be necessary for a single organization to be given tenure over a minimum area at any individual camp site, under the control of the land management authority. Council believes, however, that these camps should still be used as fully as possible consistent with avoiding damage to the environment. The wider use of camps on public land is desirable in order to avoid proliferation of camp sites, and there is a need for co-ordination of information regarding the availability of those camps that could be used by groups who do not have tenure of their own.

Skiing

The two main skiing activities, cross-country and downhill, vary in their potential impact on the environment and their requirement for the development of user facilities.

Cross-country skiing

Cross-country or nordic skiing, which involves few facilities, has little impact on the environment compared with that of downhill skiing. It embraces day trips from nearby holiday accommodation or from homes, overnight trips to huts or snow camping, langlauf racing, and ski-orienteeing. Large sections of the Alpine area presently support such activity, and most areas are capable of increased utilization.

Cross-country skiing is growing rapidly, although the number of people involved is still small relative to the number of downhill skiers. Its growth rate is likely to be sustained for some time because it costs relatively little and a number of suitable areas are reasonably accessible.

Downhill skiing

Downhill skiing is currently the most popular form of snow skiing. The resorts in the study area attract more than 70 per cent. of the separate visits by downhill skiers to snow resorts in Victoria. The number of separate visits to Victorian ski resorts during the snow season has been growing at an annual rate in excess of 10 per cent. for the past few years.

This sport is now a major recreation business and has a growing impact on the economy of the surrounding region. Traditionally, accommodation facilities for downhill skiers have been located "on mountain" above the snowline. Acceptance of off-mountain accommodation in centres close to the snowfields will increase the impact on the local economy. Also, capital expenditure will shift towards the provision of better road access to the snowfields and day-visitor facilities at resorts.

The development of ski resorts and facilities for downhill skiing can have a substantial impact on sensitive alpine environments, particularly where major developments are undertaken above the snow-line. Future developments will require careful planning and the investment of large amounts of capital to satisfy both environment protection and recreation facility requirements.

Existing ski resorts

Existing ski resorts vary in their capabilities to cater for the increasing demand. The location of the user population and the future mix of skier categories are two main market components that influence the development of facilities. The main user market in Victoria is likely to continue to come from Melbourne, Albury-Wodonga, and the Latrobe Valley.

Mount Buller at present has a full range of slopes from beginner to advanced. Its total existing capacity of lift-serviced slopes is calculated to be approximately 4,000 skiers at any one time. This is fully utilized during peak periods. The existing accommodation facilities provide 4,325 visitor beds.

Falls Creek has extensive novice and intermediate slopes, but virtually no beginner or advanced slopes. The present capacity of lift-serviced slopes is 1,540 skiers, and accommodation facilities provide 2,035 visitor beds.

Mount Hotham has limited beginner and novice slopes, but has a large potential for intermediate and advanced slopes. Its estimated existing capacity of lift-serviced slopes is 770 and it contains 1,120 visitor beds.

Mount Buller, the largest ski resort in Victoria, caters mainly for Melbourne visitors, a high proportion of whom visit the area on weekends, particularly as day visitors. Falls Creek and Mount Hotham, being further from the State capital, cater for weekend and longer-stay visitors from Melbourne and day visitors from other centres, mainly in the north-east and Gippsland.

Resort development

Of a number of new areas with potential for development, some could be developed in conjunction with existing resorts. A major criterion in evaluating areas for possible future development is the need to provide sheltered slopes with a variety of aspects, to provide good snow conditions under various climatic conditions, and in particular slopes that cater for beginner and intermediate skiers. Other major considerations include location relative to the main population centres, access, parking facilities, environmental effects, and potential conflicts with other uses and values.

Council has investigated the potential for additional downhill skiing facilities in a number of areas, including existing resorts as well as many presently undeveloped locations. It concluded that the first priority should be the development of existing resorts at Mount Buller, Falls Creek, and Mount Hotham to their optimum capacity, taking into account their inherent capacities for snow sports, environmental considerations and potential land use conflicts. This would include the creation of 122 ha of new ski slopes at Corn Hill near Mount Buller, and further development at Falls Creek and Mount Hotham. Details of the resort area boundaries are given in Recommendations O6-O9.

In addition to the above developments, Council considered that resort facilities at Mount Stirling and the expansion of facilities at Lake Mountain (see final recommendations for the Melbourne area) should be given a high priority. The Lake Mountain area is popular for bushwalking during summer, but with careful planning Council considers that both winter and summer recreation activities can be enhanced with little conflict. The nature conservation values of the area, particularly those in the Echo Flat locality, should be protected.

The development of Mount Stirling as a resort should only be commenced after substantial completion of the Mount Buller resort. Additional facilities with a wide variety of slopes in the three main skier categories (beginner, intermediate, and advanced) will be created within an average of 3½ hours' travel time from Melbourne. This resort could provide day-use facilities and, in time, overnight accommodation to service the snowfields. It could also serve as a base for cross-country skiing. The further development of the Lake Mountain area for snow play activities could reduce the numbers of non-skiers visiting the Mount Buller-Mount Stirling complex and thus relieve pressure on day-visitor facilities.

The development of Mount Stirling must be carefully planned to minimize the visual and physical impact on the environment and on summer recreation activities in the area. It is, however, not in a remote locality and is surrounded by tracks and logging roads, and associated timber harvesting. The location relative to the snowline and extent of accommodation facilities to service the snowfields should be determined only after careful study. The Council has chosen not to make any firm recommendations on these matters, as comprehensive and detailed investigations need to be conducted before this can be done.

The resorts proposed by Council provide for a balanced development catering for the main skier market centres and the main skier categories. It is envisaged that a mix of accommodation at high and low levels would be provided, low-level development of year-round facilities being based in the vicinity of the townships of Mirimbah, Mount Beauty-Tawonga, Bright, Harrierville, and Omeo. Dispersed development of low-density accommodation facilities should be avoided to minimize the cost of providing essential services, the environmental effects, and the visual impact, particularly in the non-snow season. All accommodation facilities within alpine resorts should be limited to declared areas that can be adequately serviced and can satisfy requirements for catchment protection.

The detailed investigation undertaken by Council indicated that the developments proposed above would cater for the immediate needs for additional resort facilities. When optimum capacity of these resorts is achieved, the development of slopes on Mount McKay could be considered (to extend the capacity of the Falls Creek alpine resort). Because of their environmental sensitivity, Council does not recommend development of Mount Bogong, Bakers Spur, or the Mount Feathertop-Bungalow Spur area for downhill skiing. Council expresses concern at the possible environmental consequences resulting from development of some other potential ski areas, such as Cobungra Gap and Mount Fainter, and believes it will be necessary to make detailed studies of the likely effects any such development may have on the environment and on other land uses before these areas are further considered.

Conflicts between cross-country skiing and other uses are relatively few and no specific areas need be set aside for the pursuit of this activity, except adjacent to or within areas used for downhill skiing. The committees of management are responsible for the delineation of cross-country ski trails within resort area boundaries, and should co-operate with the authorities managing adjacent land in the provision of trails and snow-pole lines that extend beyond those boundaries. Information centres and base stations for cross-country skiers should also be established as part of the facilities in each alpine resort. These centres should provide details of the various trails in the area, location of refuge huts, and weather information, and act as a route-registration base for skiers. The management authorities of both the resort and adjacent land should co-operate in the provision of the base stations and in the provision and maintenance of refuge huts (within the resort).

Alpine resort reservation and management

The Council believes that ski villages—and their ski runs, lifts, and associated service areas—should be reserved as alpine resorts. Each resort should be managed by a committee of management, comprising representatives of the people or bodies that use the area, have investments there, or have responsibility for some aspect of management.

The Council considers that the committee could contain representatives of each of the following :

Government

- * the department to whom the committee of management is responsible, whose nominee should be the chairman
- * those of the following departments whose expertise is required in the management of that resort :
 - Soil Conservation Authority
 - Country Roads Board
 - Public Works Department
- * the appropriate Shire Council

Commercial

- * ski-lift interests
- * other commercial interests

User groups

- * one person with special knowledge of downhill skiing
- * one person with special knowledge of cross-country skiing
- * lessees or site-holders in the resort area
- * one person with a special knowledge of or interest in all aspects of alpine recreation over the whole year

Council supports the co-ordination of the development of alpine resorts, including :

- * preparation of a planning policy statement for all ski resorts, prescribing :
 - * minimum standards for building
 - * standards for slope development
 - * standards for provision of services
 - * guidelines for occupancy, tenure, franchises for new development, and statutory rules
 - * standards for the conservation of the environment
- * consideration of broad schemes for major development at alpine resorts and priorities for disbursement of public funds for major capital works

Recommendations

Recreation

- O1** That public land continue to be available for a wide range of recreation uses where these can be accommodated without detriment to other values. Land management authorities should aim at controlling the types, levels, and patterns of recreational use according to the capability of particular areas to sustain such use without irreversible change or significant conflict with the primary purpose of the area.

Note :

A road from Dartmouth village to the north-western section of the Dartmouth Reservoir, which will provide access for day picnicking and various water sports, is currently under construction following government approval. Provision of additional access and facilities for recreation associated with the Dartmouth Reservoir is under consideration by the State Rivers and Water Supply Commission. It is expected, however, that no detailed investigations will be undertaken until facilities for recreation in the north-western part of the Reservoir are well established, management arrangements for recreational use of the storages are formulated, and the rise and fall of the lake is known.

New recreation reserve

- O2** That the area of 21 ha at Harrierville, shown on the maps, be used for informal recreation (picnicking, camping, etc.) as permitted by the managing authority.
- and that it be permanently reserved under section 14 of the Land Act and managed by the Department of Crown Lands and Survey.

Motorized recreation

- O3** That vehicular use of roads (within the meaning of the *Land Conservation (Vehicle Control) Regulations*) continue to be permitted on public land except where closure is necessary because of erosion hazard, seasonal conditions, excessive maintenance costs, public safety, or conflict with the primary use of the area.

Over-snow vehicles

Such vehicles can damage fragile environments where snow cover is patchy and thin and their presence is a major source of conflict with non-motorized snow activities such as cross-country skiing.

- O4** (a) that the use of over-snow vehicles within alpine resorts be confined to providing transport and services associated with the operation of the resort and for search and rescue work
- (b) that, outside resort areas, over-snow vehicles be used only for search and rescue and essential management operations.

Alpine resorts

O6-O9 That the areas listed below and shown on the maps :

(a) be reserved as alpine resorts (the boundary of each resort area may require minor adjustments in the future and these should be decided upon after consultation between the committee of management of the resort and the managing authority of the adjacent land)

that

(b) development planning and implementation in each one minimize the environmental and visual impact of facilities, consistent with the efficient planning and management of a ski resort

(c) grazing be permitted to continue subject to the policies and conditions specified in chapter Q, Agriculture, except in areas defined by the committee of management around structures and other facilities and in areas where grazing is currently excluded

(d) accommodation facilities within them be limited to areas that can be adequately serviced and can satisfy requirements for catchment and environment protection

and that each resort be managed under the relevant legislation by a committee appointed by the appropriate Minister, which should include representatives of government departments, commercial interests, and user groups as suggested in the section on reservation and management above.

O6 Mount Buller alpine resort (1,780 ha)

(a) that it be developed to optimum capacity for downhill skiing

and that a representative of the Forests Commission be chairman of the committee of management.

O7 Mount Stirling alpine resort (2,030 ha)

(a) that it be developed for downhill and cross-country skiing

(b) that the extent and location of any accommodation facilities be determined only after detailed study of the available options

(c) that its development be phased in to follow the achievement of optimum capacity at Mount Buller

(d) that its development not prejudice progressive development of other resorts and that it be managed in conjunction with the Mount Buller alpine resort and a representative of the Forests Commission be chairman of the committee of management.

Note :

Logging on a once-only basis should be permitted in limited areas as indicated on Map C (and the variation to Map C as indicated on page 4), and should be completed by 1988, but every effort should be made by the Forests Commission to ensure that timber production from these areas is completed before this date.

O8 Mount Hotham alpine resort (2,530 ha)

- (a) that it be developed to optimum capacity for downhill skiing consistent with the requirements of cross-country skiers, particularly in the Mount Loch and Swindlers Spur (Spargos Hut) areas
- (b) that wildlife habitats, particularly those of the mountain pigmy possum, be protected by management prescriptions prepared by the Fisheries and Wildlife Division
- (c) that significant plant species be protected
- (d) that ski lift development not take place in areas adjacent to the Alpine Walking Track

and that a representative of the Department of Crown Lands and Survey be chairman of the committee of management.

O9 Falls Creek alpine resort (1,360 ha)

- (a) that it be developed to optimum capacity for downhill skiing consistent with the requirements of cross-country skiers
- (b) that the decision regarding provision of car parking facilities in the Rocky Valley area be subject to environmental evaluation
- (c) that areas adjacent to the Falls Creek alpine resort may be used for activities associated with the resort, but only after agreement is reached between the State Electricity Commission, the Soil Conservation Authority, and the Falls Creek Tourist Area Management Committee

and that a representative of the State Electricity Commission be chairman of the committee of management.

Notes :

1. The location of this area within a proclaimed water supply catchment should be recognized in the development plans for the area.
2. The rare mountain pigmy possum has been recorded in the Mount McKay area adjacent to the Falls Creek resort. Should fauna surveys show that the mountain pigmy possum occurs within the resort area, then its habitat should be protected by management prescriptions prepared by the Fisheries and Wildlife Division.

Huts

- O10** That prior to the erection, replacement or maintenance of refuge or other huts the approval of the land management authority be obtained. The siting and design of such huts should be in accordance with environmental and aesthetic values.

P. ROADSIDE CONSERVATION

The primary purpose of road reserves is to provide for communication, transport, and access. Vegetation along the road verges can also have particularly high conservation, recreation, and landscape values, especially in the agricultural districts where most of the native vegetation has been cleared. Generally this vegetation, although it affects landscape values, is somewhat less important for conservation in the alpine area. The roadside environment does, however, depend largely on management of the road reserve. It is important that the managers concerned (usually the Country Roads Board and Shire Councils), and the managers of adjacent public land, consider these landscape values, and that this vegetation be disturbed to the minimum extent consistent with the safe and efficient design and use of the road.

Unused roads

When Victoria was being settled, surveyors provided access to every block by means of a surveyed Crown road. Many of these have never been used as roads, and they are usually held by the occupiers of the adjoining land under an unused-road licence. The Forests Commission controls the vegetation on unused roads that have been formally declared as such.

Roadside picnic areas

In attractive locations, small areas should be developed to provide for travellers who wish to relax and picnic away from the road reserve. It is not intended that these areas would cater for large numbers of people, but limited picnicking facilities should be provided.

Recommendations

P1 That road reserves throughout the study area continue to be used for communication, transport, access, surveys, and utilities.

Landscape, recreation, and nature conservation values can best be protected by observing the following guidelines. The Council recognizes that many of these are already being implemented by the bodies responsible for the construction and maintenance of roads.

- * When improvements to a road are being carried out, trees and shrubs on the road reserve should be disturbed to the minimum extent consistent with the safe and efficient design and use of the road.
- * Major works to re-align minor roads carrying trees and shrubs should not be undertaken unless clearly warranted by the nature and volume of the traffic carried, and the managers of adjacent public land should be consulted regarding such works.
- * When widening or re-alignment of roads is proposed, geological and historical features that may be affected should be investigated and every effort made to retain or preserve those that are designated significant.
- * Where re-alignment of a road results in a section of the old road being cut off, wherever possible that section should not be sold but used as a recreation and rest area or incorporated into an adjacent appropriate reserve.

- * Where a pipeline or overhead wires are to follow a road carrying trees and shrubs in a rural district, every effort should be made to locate the easements on private land alongside the road if this is already cleared, rather than clearing roadside vegetation to accommodate them.
- * While recognizing the need for clearing or pruning of vegetation close to power lines to reduce the associated fire risk, the State Electricity Commission should consult with the Forests Commission regarding the manner in which the risk posed by vegetation can be reduced, while at the same time reducing the environmental impact to a minimum.
- * Road-making materials should not be taken from road reserves unless no suitable alternative sources are available. Any such removal should be done so as to ensure a minimum disturbance of the native vegetation, and the disturbed area should be rehabilitated, where possible, with vegetation native to the area.
- * Burning-off, slashing, or clearing roadside vegetation should be kept to a minimum consistent with providing adequate fire protection.
- * Weeds and vermin on roads should be controlled by means that do not conflict with the uses given above.
- * The various road management authorities, when planning to upgrade roads that have heavy recreational use, should give due consideration to recreational requirements, and give priority along such roads (when funds are available) to the development of roadside recreation facilities.

P2 That the following guidelines be applied to unused roads.

- * The clearing of native trees and shrubs other than noxious weeds should continue to be clearly prohibited in the conditions of unused-road licences.
- * A condition permitting public use of licensed unused roads should be written into unused-road licences where necessary to provide practical access to public land.
- * Unused roads or easements should not be alienated if there is any likelihood that they will have value for future traffic, nature conservation, recreation, or other public use.

P3 That the land management authorities establish picnic areas in suitable locations adjacent to the road reserves.

Q. AGRICULTURE

Most land in the alpine area suitable for agriculture was alienated during the period of early settlement. The public land generally does not have significant value for agricultural development, apart from certain areas located within or adjacent to the main agricultural districts. These areas are suitable only as additions to existing holdings.

Grazing on public land

Public land here has been an important resource for grazing since the early days of settlement. Cattlemen and grazing have played an important role in the history of the high country. They pioneered the area, and often assisted other early users by acting as guides and by providing horses for transport of people, supplies, and equipment. Cattlemen actively assist in fire suppression and search and rescue in the area, and their huts continue to be important for the safety and convenience of bushwalkers and cross-country skiers.

Today about 100 graziers run cattle on licensed grazing blocks in the alpine area. The utilization of these blocks is closely integrated with the management of feed supplies on the grazier's home properties. The public land provides a relatively low-cost grazing area, which is of considerable importance to the financial viability of many of the cattlemen. The nature, and in many cases, the size of the graziers' freehold land does not generally permit diversification into other forms of agricultural production.

The level of dependence on the public land varies from grazier to grazier. In a few cases, little use is made of the runs, but in most they play a major part in the operator's broad management system. The usual practice is for cattle to be taken to the high country in late spring-early summer and remain there until the autumn. By sending the cattle to the grazing runs, the graziers conserve some spring pasture and the summer growth on the home properties, which the cattle can then graze on return in autumn. Not all cattle, however, return to the home properties. Many of the calves are sold directly after the muster on the runs at special autumn calf sales. Other cattle are transferred directly from the summer runs to a lower-elevation winter bush block. These may then be sold directly from the bush block or returned to the home properties in late winter. In many cases 50 to 75 per cent. of all natural increases of the beef herds spend only the first 3-4 months of their lives on the home properties. Similarly, many of the breeding cows spend only 4-5 months of the year there.

In the study area graziers have established a number of travelling stock routes, which are used mostly for droving stock between the home properties and grazing areas on public land. Other routes on public land are used less frequently for droving stock from home properties in times of drought or to livestock sales, although in recent years more use has been made of road transport. Council considers that provision should be made for stock-droving routes to remain available for moving livestock. If it is necessary to close a particular route, alternative arrangements for moving stock should be made.

Public land in the area varies in its sensitivity to grazing pressure. The impact of cattle is greatest in the alpine zone, but is significant in much of the sub-alpine zone, especially in areas that contain mossbeds. Grazing of lower-elevation forest generally has lower impact.

Since the 1940s controls of grazing have been progressively implemented to reduce damage occurring in some sensitive areas. The Soil Conservation Authority was given supervisory control over all grazing above the 1,219 m contour (approximately the snow-line) by a Premier's Directive in 1960. In co-operation with the cattlemen, the Soil Conservation Authority currently determines the allowable number of cattle and the duration of grazing on the Bogong High Plains and adjacent high country, and in the Bennison Tablelands and Moroka Basin regions. Several years ago, highly sensitive areas such as the summits of Mount Bogong, Mount Hotham, Mount Loch, and Mount Feathertop were withdrawn from grazing. This has resulted in a significant increase in ground cover.

Council believes that controlled grazing is a sustainable use in much of the forested land below the snow-line. Continued supervision will be necessary to ensure that no irreversible damage to natural ecosystems occurs. The conditions governing grazing in particular areas may need to be modified from time to time, depending on the condition of the soil or vegetation or on the need to protect other values. In some areas grazing can assist in management by reducing the build-up of dry plant residues, particularly where exotic pasture species have been introduced, thus lessening the fuel available for fires.

The area (about 11,000 ha) of grassland and herbfields in the alpine zone, although small compared with the total public land, is particularly sensitive and, because of the harsh alpine environment, recovers extremely slowly from any form of disturbance. Cattle preferentially graze the herbs and grass seed heads and frequent those areas where herbaceous plants predominate. The drainage lines that once contained mossbeds are often used by cattle in search of water and palatable herbaceous vegetation. This results in trampling of these easily damaged wet areas, which impedes their recovery or even causes renewed deterioration. The herbfields of the snow-patch areas are heavily grazed. On the Kosciusko plateau of New South Wales, it has been demonstrated that the mossbeds and peat soils of drainage lines are of importance in catchment hydrology because of their retarding effect on the release of water to streams, their promotion of early snow melt, and their action in filtering silt. These aspects have significance for hydroelectric power generation from the Kiewa scheme, and for the prolongation of the spring and summer flows that are valuable for irrigation. More information is needed about the quantitative effects of these phenomena on the hydrology of the Victorian alpine areas, but generally they may reasonably be expected to be similar to those recorded in the Kosciusko region.

Council considers, however, that current controls on stock numbers and length of grazing season have substantially halted trends towards deterioration of the water-supplying capability of the alpine and sub-alpine grasslands and herbfields, except for snow-patch areas and entrenched drainage lines through degraded mossbeds; but, to attain the highest standards of catchment condition, the long-term phasing out of grazing in many of these areas would be required.

The pattern of grazing on these grasslands and herbfields adversely affects nature conservation values by reducing the structural and floristic diversity of the vegetation as well as its luxuriance. Grazing can also reduce the summer display of wildflowers that is a notable feature of ungrazed alpine herbfields. In the ungrazed high-elevation Kosciusko National Park, the wildflower display is a major tourist attraction. The alpine vegetation also provides habitat for a numerous and varied invertebrate population, including a number of species largely restricted to the alpine zone. A few vertebrate species also inhabit the area.

Council recognizes the very high nature conservation values of the alpine and sub-alpine grasslands and herbfields and believes that the long-term aim should be to remove grazing from these areas. This gradual phasing out of grazing, and the provision of alternative grazing areas whenever possible, will assist in reducing the effects on the livelihood of cattlemen. Those high-altitude areas containing grasslands and herbfields that are currently excluded from grazing should remain free from grazing ; in addition, Council has proposed that grazing be withdrawn from portions of the Bogong High Plains and areas near Mount Howitt and the Bluff, and additional areas near Mount Bogong and Mount Feathertop (see Recommendation A2). In other high-altitude areas, particularly those containing sensitive summits and ridges, cattle numbers may need to be reduced. Controls on stock numbers and length of the grazing season, similar to those currently in operation on the Bogong High Plains, should apply throughout the alpine area. The current supervisory control of all grazing above 1,219 m should remain the responsibility of the Soil Conservation Authority.

Forms of land tenure

Grazing rights in the area are currently granted by the Department of Crown Lands and Survey and the Forests Commission. These are presently in the form of annual licences or short-term agistment rights. The Council believes that grazing on public land should be controlled by issuing agistment rights, annual licences, or longer-term licences, depending on the circumstances as outlined below. In all cases the management authority must be able to exercise general supervision of grazing management, control stocking rates, and exclude stock from parts of the licence area.

The issue of agistment rights, or annual licences with stock limits, is suited to situations where :

- * the areas are in the alpine and sub-alpine grasslands and herbfields (above 1,219 m)
- * the area is included in a park
- * it may be necessary to limit grazing in the future because of flora and fauna values, the need to protect water supply, or erosion hazard
- * the use for grazing is clearly subordinate to other uses
- * grazing is used occasionally as a management tool
- * the demand for grazing is intermittent

In some situations at low elevation, the land managing authority may issue longer-term licences that—while preserving its supervisory control—would give the licensee greater security of tenure and thus encourage him to make best use of the forage resource. They would not lead to freehold tenure. In proclaimed water supply catchments or in catchments that may be proclaimed in the future, conditions may apply precluding the granting of longer-term licences or affecting those already granted. Some suggested terms and conditions for grazing licences are set out below.

- * Provision should be made to allow the land managing authority to exercise general supervision of grazing management, especially with respect to times of grazing and stocking rates.
- * When three-quarters of the licence period has expired, the licence should be reviewed and a decision made on renewal (longer-term licences only).
- * Grazing may be excluded from parts of the licence area, as determined by the managing authority.

- * No sub-leasing or assignment of grazing rights by a licensee should be permitted without the approval of the management authority.
- * Cultivation should not be permitted.
- * Vermin and noxious weed control should continue to be the responsibility of the licence-holder under the supervision of the managing authority.
- * Sheep should be permitted to graze on licensed areas only with the approval of management authority and should not be allowed to graze areas above 1,200 m.
- * The lighting of fires for burning-off by the licensee should continue to be prohibited.
- * Grazing licences would not imply any form of exclusive use or control over the area by the licensee.
- * Licences should be subject to any other terms and conditions that the managing authority considers necessary.
- * Licences should be liable to cancellation for non-compliance with the conditions.

Council believes that there should be a greater degree of co-ordination between authorities and the formulation of a common policy in the selection and management of areas on which grazing will be permitted. Land management agencies, the Department of Agriculture, and the Soil Conservation Authority should consult to co-ordinate policies with respect to :

- * delineation of grazing areas, and the allocation and terms of grazing rights (Council's recommendations may necessitate some re-allocation of grazing areas)
- * grazing charges
- * exclusion of stock when and where necessary to provide for conservation of flora and fauna, protection of water catchment values, protection of forest regeneration works, or the reclamation of eroded areas
- * additional research necessary to monitor the effects of grazing on catchment hydrology and nature conservation values.

Local advisory committees consisting of representatives of the management authority, Soil Conservation Authority, and graziers should be formed to advise the management authority on :

- * type of livestock, stocking rates, and dates of entry and removal
- * fencing and water supply

The District Advisory Committees (or local committees of these) of the Soil Conservation Authority currently carrying out this function may form the basis of these local advisory committees.

Recommendations

Land recommended for agriculture

- Q1-Q15** That the land described below and shown on the maps be used for agriculture (it is intended that this land should form additions to present farms) and that with reference to section 5 (3) of the *Land Conservation Act 1970*, this land be made available for agriculture in accordance with the provisions of the *Land Act 1958*.

- Q1 8 ha west of allotment 15 of section 15, Parish of Wonnangatta.
- Q2 6 ha, being allotment 25 of section 15, Parish of Wonnangatta.
- Q3 4 ha south of allotment 17 of section 15, Parish of Wonnangatta.
- Q4 8 ha, being allotment 26A of section 17, Parish of Budgee Budgee.
- Q5 141 ha, being allotment 13A of section 1, Parish of Bingo-Munjie.
- Q6 8 ha north of allotment 15, Parish of Wollonaby.
- Q7 61 ha east of allotments 6, 7, 8, 9, 10, and 11 of section 2, Parish of Wollonaby.
- Q8 100 ha north of allotment 17, Parish of Mowamba.
- Q9 20 ha, being portions of allotments 69A and 74, Parish of Kancobin.
- Q10 64 ha, being allotment 46A and Crown land to the north, Parish of Jinderboine.
- Q11 48 ha south of allotment 20, Parish of Jinderboine.
- Q12 31 ha west of allotments 3A and 3D of section 16, Parish of Hinno-Munjie.
- Q13 17 ha adjacent to allotment 2A of section 2, Parish of Cobungra.
- Q14 60 ha, being portions of allotments 4A and 5 of section 2, Parish of Moonip, subject to an erosion-prevention clause being inserted in any alienation agreement.
- Q15 4 ha north of allotment 14A, Parish of Gelantipy East.

Land suitable for agriculture

- Q16-Q17 That the land described below and shown on the maps is suitable to be developed for agricultural production, but the timing of release for this purpose be subject to review by Council.
- Q16 456 ha, being Crown land in the Parishes of Mowamba and Beloka, west of allotments 1, 2, 7B, and 8A of section 1, Parish of Beloka.
- Q17 250 ha south of allotments 19 and 24 of section 1, Parish of Beloka.

Grazing on public land

- Q18 That grazing continue to be excluded from areas currently withdrawn from grazing as indicated on the map (i.e., Mount Buller alpine resort ; Mount Hotham-Razorback area ; Mounts Feathertop and Bogong, and around Falls Creek).
- Q19 That grazing on some areas be phased out as indicated in the recommendations for the wilderness, reference areas, parts of the Wonnangatta-Moroka and Bogong National Parks, and the Bluff-Mount Clear Natural Features and Scenic Reserve (see recommendations for the above areas and Maps A and B).
- Q20 That, in other areas of public land, grazing be subject to the policies outlined in this section and meet the major objectives set by Council for particular areas.
- Q21 That the form of tenure for grazing on public land be that considered most appropriate by the management authority—agistment, annual licence, or longer-term licence.
- Q22 That committees, as described above, advise the management authorities on matters relating to grazing on public land.
- Q23 That the fees charged for grazing on public land reflect the grazing value of the land.

R. MINERAL AND STONE PRODUCTION

The continued existence of our technological society will depend on the availability of minerals. The study area contains known deposits of "gold" and "minerals" as defined in the *Mines Act 1958* and as subsequently gazetted (metallic minerals, coal, etc.). Nevertheless, knowledge of the location of our mineral resources is far from complete and new deposits of commercial significance will undoubtedly be found. Furthermore, currently uneconomic deposits of important minerals may become economically viable, and other minerals that are not used at present may become important.

Government has a responsibility to establish the existence and extent of the State's mineral resources. When a new deposit is discovered in an area where mineral extraction is not a currently approved land use, it may be of such importance that a change of the land use is required in the national interest. The decision on whether such a change is in fact necessary can only be made against a background of the best available knowledge of the location and extent of alternative sources of the particular mineral.

It is important therefore that the reservation of conservation areas should not automatically exclude exploration for mineral or fossil fuel resources, either by exploration companies under strict supervision or by the Department of Minerals and Energy itself. Attention should be directed towards ensuring that other values and interests are protected, rather than attempting to prevent exploration activities.

Materials covered by the definition of "stone" in the *Extractive Industries Act 1966* (including rock, gravel, clay, sand, and soil) are widespread in the area. There is a strong community demand for new and better roads and buildings, and so for the materials necessary for their construction. Many of these materials are provided from private land, but public land is also an important source.

The Council is concerned by the complexity of legislation and procedures governing extraction of "stone", and by the lack of control accompanying some of these procedures. (For example, although all quarries are subject to the *Extractive Industries General Operating Regulations 1968*, Country Roads Board, municipal, and other non-commercial quarries are not subject to licensing under the *Extractive Industries Act 1966*.) A substantial number of unwise excavations have been made on public land, and in some instances the rehabilitation of excavated land is lagging. There is a need for review of existing legislation and procedures, to allow more rational use of the "stone" resource of the State.

Poorly planned and located excavations can effect surrounding lands through noise, dust, unsightliness, and erosion, and can diminish the value of the land. With care, however, these effects can be avoided or minimized.

General principles

* All exploration for and extraction of "gold", "minerals", and/or "petroleum" on public land (including operations under miner's rights) should be subject to the approval of, and to the conditions imposed by, the Department of Minerals and Energy, such approval and conditions being subject to agreement with the authority managing the public land and the Soil Conservation Authority, and being in conformity with the guidelines outlined hereunder.

- * There should be co-operation and consultation between the land managing authorities, the Department of Minerals and Energy, the Soil Conservation Authority, and the other relevant authorities with respect to the procedures to be adopted for the exploration and extraction of "stone" on public land. Any operations on public land should continue to be subject to the approval of the appropriate managing authority.

In all cases, the procedures that are established should apply to municipal councils, the Country Roads Board, and other public authorities as well as to commercial operators. To ensure this, the relevant *Acts* may have to be amended.

- * A system should be established that would guarantee, before work commences, the availability of funds for progressive and final reclamation for any excavation or operation. Provision should also be made to enable the acceleration of the rehabilitation of all existing extraction areas on public land.
- * Royalties for materials extracted from public land, including site rental when appropriate, should be more closely related to the market value of the material. This would eliminate the temptation to use public land purely on the grounds of the nominal royalties often levied in the past.

Guidelines

The following guidelines should apply to all extraction from public land :

- * No sites for the extraction of "gold", "minerals", and "petroleum" should be opened in areas that the Department of Minerals and Energy and the land management authority in consultation consider to be of greater value for their aesthetic or nature conservation values.
- * The Department of Minerals and Energy should not permit any extraction of "gold", "minerals", or "petroleum", unless satisfied as to the reasonable economic viability of the proposed extraction. The Department should also require, as far as is reasonably possible, the lodgment of mining plans that show the expected post-mining state of the land.
- * No sites for the extraction of "stone" should be opened in areas that the managing authority, in consultation with the Department of Minerals and Energy, considers to be of greater value for other uses including aesthetic or nature conservation values. The advice of the Department of Minerals and Energy should also be sought as to the desirability of proposed excavations, having regard to alternative sources of "stone".
- * Extraction of "stone" should generally be concentrated on the fewest possible sites in an area, and any one site should be completely worked out and, where possible, its reclamation ensured before a new site is exploited. The type of excavation to be carried out should be that with the lowest environmental impact consistent with effective use of the resource. In general, and where the nature of the resource permits, excavations for "stone" should be deep and limited in area in preference to shallow excavations over a wide area. The extraction of granitic sand occurring as shallow deposits in the weathered profile should not be permitted until it has been established that no suitable alternatives are available. In the special circumstances where approval is given for this form of extraction, particular attention should be given to the prevention of soil erosion.

- * Where an application for the removal of "stone" from a stream-bed is considered, the land management authority should take particular care to ensure that the operations will not directly or indirectly cause either erosion of the bed or banks or undue pollution of the stream. In addition to the arrangements outlined above for "stone", the land management authority should also consult with the relevant water supply and conservation authorities, and should consider the scenic and recreation values of the area. Alternative sources with a lower environmental impact should be used where they are available. The environmental effect of extraction may be reduced if alluvial stone is obtained from properly managed quarries on the river terraces, rather than from the present stream-bed.
- * All extraction sites should be fully reclaimed where possible. Reclamation should follow extraction progressively when possible, but otherwise should begin immediately extraction is completed. The requirements for reclamation should be included in the conditions of the lease or licence before any approval to extract is granted. The reclamation may include, for example, replacing topsoil, revegetating the site with plantation forest, filling a quarry with water and developing the site as a park, using a gravel pit for off-road vehicles, using a quarry for garbage disposal prior to reclamation, or restoring the site as closely as possible to its original topography and revegetating it with species native to the site.

In addition to the above, the approval of the Soil Conservation Authority should continue to be sought for any exploration or extraction operations for "gold", "minerals", "petroleum", or "stone", where the subject land is :

- * at an elevation exceeding 1,219 m
- * within a coastal foreshore reserve
- * within a proclaimed water supply catchment.

Recommendations

- R1** That public land in the study area (other than land exempted or excepted from occupation for mining purposes under the *Mines Act 1958*) continue to be available for extraction of "gold", "minerals", "petroleum", and "stone" subject to the principles and guidelines set out above.
- R2** That public land in the study area continue to be available for exploration for "gold", "minerals", "petroleum", and "stone" subject to the principles and guidelines set out above.

Notes :

1. The Council notes the mineral potential of the Silurian volcanic and sedimentary deposits in the Cobberas-Tingaringy National Park and believes that exploration of these deposits should be permitted subject to the principles and guidelines outlined above.
2. Particular attention should be given to roading requirements, and new road access for exploration purposes should be kept to the absolute minimum.
3. In the event of a viable mineral discovery being made, a decision as to whether mining should take place should be based on whether the operation would be in the State interest, including the environmental acceptability of the operation.

R3-R4 That the areas described below and shown on the maps be used for the extraction of "stone", subject to the principles and guidelines set out above. and that they be temporarily reserved under section 14 of the *Land Act* 1958, and managed by the Department of Crown Lands and Survey.

R3 Warrambat Slate Quarry
9 ha of land in the Parish of Warrambat.

R4 Werमतong Gravel Reserve
6 ha, south of allotment 9 of section 6, Parish of Werमतong, and north of stream-side reserve M6.

Note:

Gravel extraction should commence at the furthest point from the streamside reserve, and be worked and reclaimed in stages. Consideration should be given to relocating the access track and ensuring adequate screening of the workings from the streamside reserve. Care should be taken that vegetation on the adjoining streamside reserve is not damaged.

S. UTILITIES AND SURVEY

Many utilities occupy public land. They include roads, pipelines, power-lines, power stations, hospitals, churches, public halls, shire offices and depots, garbage depots, sanitary depots, cemeteries, and sewage-treatment works. These recommendations do not specifically refer to many of the small areas used for the purposes listed above, as no change of use is proposed. It is intended that for such areas existing legal uses and tenure should continue.

The absence of firm planning proposals, accompanied by the necessary detailed information, makes it impossible at present to provide for future requirements of land for survey and utilities. The use of land for these purposes will need to be considered when particular projects are firmly proposed. The various recommendations in the report are not intended to preclude such use of the land, and would be subject to review at the appropriate time.

Council believes that government agencies concerned with provision and installation of communication equipment, transmission lines, pumped storage sites, power stations, pipelines, roads, etc. should be requested to submit to the Council and the management authority during the early planning stages any major proposals that would involve occupation agreements or the setting aside of sites on public land. This would assist in achieving co-ordinated planning, and perhaps avoid the necessity for costly resurveys.

Recommendations

General utilities

- S1 That existing or approved easements be used to provide access and services.
- S2 That new power-lines, pipelines, communications equipment, and other utilities be planned to minimize disturbance to public land and protect the values associated with this land, that they not be sited on public land without the agreement of the managing authority and where appropriate the Soil Conservation Authority, that new pipelines and power-lines follow existing easements if possible (this may require widening some easements), and that authorities have the right to occupy a minimum area for access and maintenance around their installations.

Note :

The State Electricity Commission of Victoria has commenced construction of a 220 kV power-line that will link the Dartmouth power station and the Mount Beauty terminal station. The route for this transmission line (shown on the maps) has been authorized by the government on the recommendation of a Parliamentary Public Works Committee. It passes through Granite Flat and along Rodda Creek, crosses the Eskdale Spur east of Mount Emu, and descends to Mountain Creek and Mount Beauty.

Garbage and sanitary depots

Council believes that sites on public land used for the disposal of garbage and sanitary material should be located to cause minimal conflict with nature conservation values, having regard to the cost of alternatives. Sites should be provided in reasonable proximity to users, to minimize transport costs and illegal dumping of rubbish.

- S3** That the areas used on a temporary basis (such as garbage depots and sanitary depots) be fully rehabilitated when no longer required. (This should apply to sites used illegally as well as those used legally. Where the user or users are known, rehabilitation should be at their expense.)

Fire look-outs

- S4** That the Forests Commission have the right to occupy a minimum area around each of the fire look-out installations.

Trigonometrical stations and border markers

Numerous surveying stations are located in the Alpine area. Of historical interest are the survey markers and accompanying stone cairns that define the Victoria–New South Wales border between the headwaters of the Murray River and Cape Howe. The geodetic survey of this 176 km line along the border was carried out by Victorian government surveyors, Black and Allen, in the years 1869–1872. If a stone cairn must be dismantled to allow access to the marker for survey purposes, it should be rebuilt upon completion of the survey. It is suggested that a new reference point be located adjacent to the original marker to avoid future dismantling of the cairn.

Responsibility for maintenance and protection of the markers rests jointly with the governments of the two States.

- S5** That the minimum area necessary for survey purposes be temporarily reserved around trigonometrical stations on public land where it would otherwise remain as unreserved Crown land and, where other forms of public land tenure apply, that the Department of Crown Lands and Survey have the right to occupy a minimum area around the station or border marker and provide lines of sight.

Navigation aids

- S6** That the Department of Transport have the right to occupy a minimum area for access and maintenance around the navigation aids on Mount Livingstone.

Roads

Roads and tracks serve a number of needs—for example, access for landholders, tourism and recreation, fire protection, timber production, and mining—but may conflict with other primary uses (water supply, some forms of recreation, or nature conservation), particularly in areas of high erosion hazard above 1,200 m.

- S7** That within the Alpine area, and particularly in erosion-prone locations, the management authorities in consultation with the Soil Conservation Authority co-ordinate the planning of essential road development, determine the standards of roading, and classify existing roads according to the uses required of them and the associated hazards.

Note :

This classification should be considered by managing authorities in deciding whether tracks or roads should be temporarily or permanently closed, the need for revegetation, and whether use of a particular road or track should be confined to management vehicles only.

Other utility areas

S8 That existing legal uses and tenure continue for areas that are at present reserved and used for utility purposes such as public buildings, municipal depots, cemeteries, schools, etc.

Low-level road

The Premier has referred the question of a low-level road between Mitta Mitta and Omeo to the State Co-ordination Council for discussion and recommendation.

T. TOWNSHIP LAND

Public land in townships is currently used for a wide range of purposes. The Council has not proposed any change of use for such public land where the present use is for schools, public halls, sports grounds, and the like. In general, public land in townships, other than those areas that have been specifically reserved and except where otherwise indicated below, should remain as unreserved Crown land to meet future requirements.

A number of deserted or near-deserted townships first proclaimed during the gold-mining boom of the late 1800s and early 1900s occur within the area, often in isolated localities. Council recommends that certain of these townships be rescinded and portions of others be rescinded where they contain public land that is no longer required for township purposes. Many of these contain the remains of cottages and mining machinery, evidence of reef-mining, and pioneer cemeteries. These relics of Victoria's mining past should be catalogued and investigated by the authority managing the surrounding land, and those having historical significance should be protected.

Recommendations

T1 That the following proclaimed townships be rescinded in accordance with the provisions of the *Land Act* 1958 :

Brookville
Glendart

and that portions of the following townships be rescinded and added to the adjacent public land :

Glen Wills
Nariel
Sunnyside

Note :

The boundaries of these townships would be defined by the Department of Crown Lands and Survey following the acceptance of these recommendations by the government.

Mount Beauty

Mount Beauty, which formed part of the Kiewa works area, was established by the State Electricity Commission to house workers on the Kiewa project. In 1957, parts of Mount Beauty were excised from the Kiewa works area and municipal administration was transferred to the Shire of Bright. Council believes that Mount Beauty should be proclaimed as a township.

T2 That the area known as Mount Beauty and shown on the map be proclaimed as a township under the provisions of the *Land Act* 1958, and that the public land within the township continue under the ownership and control of the State Electricity Commission and be made available for other purposes if required.

Dartmouth

The Dartmouth village was established to house construction workers and their families during construction of the Dartmouth Reservoir by the State Rivers and Water Supply Commission, as the constructing authority for the River Murray Commission. After completion of this project, and following the expected development of recreational facilities associated with the reservoir, the village could have importance as a tourist centre.

T3 That on completion of the Dartmouth project, and when no longer required by the State Rivers and Water Supply Commission, the Dartmouth village be proclaimed as a township under the provisions of the *Land Act 1958*.

Suggan Buggan

T4 That, if required, land within the township of Suggan Buggan be made available for commercial development of overnight accommodation facilities.

McKillops Bridge

T5 That an area of approximately 20 ha south of McKillops Bridge be temporarily reserved for possible commercial development associated with the Snowy River and Cobberas-Tingariny National Parks.

Note :

Any such development should be undertaken only with the approval of the National Parks Service (see also Recommendation A4).

U. UNCOMMITTED LAND

In seeking balanced land use, planners allocate known resources to meet known or predicted demands. The Council is aware that many changes in demand cannot be foreseen, and that the value of resources to the community will inevitably change.

Similarly, knowledge of resources will change as exploration, research, and technology progress. For these reasons, it is desirable that planning be reviewed periodically, and it must be expected that resources will be reallocated or adapted to meet changed demands.

In addition, to satisfy such future requirements, it is desirable that land not be committed unnecessarily to relatively inflexible forms of land use. The Council therefore considers it necessary to recommend that substantial areas of public land remain uncommitted to any primary use at this stage.

Land classed as uncommitted includes :

- * areas not needed to satisfy any known demand, which are retained to meet future demands as yet undefined
- * land known to have a high capability to satisfy particular demands, but not at present committed to any one use, as foreseeable requirements can be met from other areas
- * land on which further study is required to determine its capability to satisfy particular present or future demands.

Uncommitted land is to be securely retained as public land, although changes in its status may be required if these are recommended following a review by this Council. It may be used to satisfy certain present needs, provided this does not cause changes that would be difficult to reverse.

The Council wishes to emphasize that sufficient resources should be made available to the managing authorities to allow careful management of uncommitted land. Funds and personnel are essential for conservation of specific features and values, for protection of the land and adjacent areas from soil erosion, wildfire, vermin and noxious weeds, and for silvicultural treatment of forests.

In the recommendations for the adjacent north-eastern and Melbourne areas, substantial parcels of land bordering the alpine area were left uncommitted, pending the study and recommendations for this area. The Council now recommends that some of this uncommitted land be used for hardwood timber production (see Recommendations I1 and I4), or be reserved as part of a Natural Features and Scenic Reserve (see Recommendation D19).

An area to the north-east of Mount Fainter in the East Kiewa valley has high values for timber production and special values for recreation and nature conservation. This area has been recommended to be uncommitted land pending its review by the Council in 1986. Another area in the headwaters region of the Murray River adjacent to Kosciusko National Park in New South Wales has similar values. This area has been recommended to be uncommitted land pending its review by Council.

Recommendations

U1 That the land (489,700 ha) indicated on Map A be used to :

- (a) maintain the capability of the land to meet future demands
- (b) supply water and protect catchments and streams
- (c) produce those goods and services required by the community (such as hardwood timber, forest produce, and grazing) that can be supplied without significantly reducing the long-term capability of the land to meet future needs ; hardwood timber production is subject to logging prescriptions based on the principles for forest operations (see chapter I, Hardwood Timber Production)
- (d) meet the requirements of the State Electricity Commission of Victoria for the protection and operation of the Kiewa hydroelectric scheme as indicated in Recommendation A2 (j)

that

- (e) the following special features be protected :
 - * sensitive components of distinctive landscapes seen from important viewing points such as Mounts MacDonald, Clear, Bogong, Nelse, Feathertop, Fainter, and Tabletop, the Blue Rag Range, and the Twins
 - * timber tramline at Baker Creek ; the Cinnabar mine site ; environs of McMillans, McEvoy's, Dungeys, Moroka Pack, and Dargo-Omeo Mining Tracks ; relics that belong to the Crown and sites associated with early mining on the various gold-fields ; Lightning Creek-Mitta Mitta, Trappers Creek, Wombat Creek, and Jirnee water races ; environs of cattlemens huts
 - * the Jamieson Gorge, and waterfalls and gorges on the upper Tambo River
 - * silvertop open forest I in Grimme and Coleman Creek catchments, manna gum and swamp gum forests along river flats, fern gullies in the Mountain Creek catchment
 - * several rare species of frogs recorded in the upper Goulburn River and its tributaries
 - * *Koeleria australiensis* at Butchers spur ; *Goodenia grandiflora* var. *macmillanii* and *G. heterophylla* at Macalister River south of Burgoyne's Gap ; *Dampiera scottiana* in the headwaters of Warrigal Creek ; *Eucalyptus neglecta* at Buckland River, south-east of Treasure's Homestead, and Spring Creek near Cobungra ; *Astrotricha parvifolia* and *Prostanthera rhombea* in the Valencia Creek area ; *Tetratheca* sp. aff. *procumbens* near Moroka Hut ; *Grevillea willisii* near Anglers Rest ; *Hydrocotyle* sp. aff. *sibthorpioides* at Buenba, *Dillwynia prostrata* at Seldom Seen and Boundary Creeks, *Thesium australe* in the upper reaches of Little River and at Gillin-gall, *Helichrysum adnatum* and *Pimelea dichotoma* at Marble Creek near Bindi

and that it be unreserved Crown land withheld from sale and be protected forest under the provisions of the *Forests Act 1958*.

U2 That the land (1,800 ha) in the East Kiewa valley indicated on the maps be used to :

- (a) maintain the capability of the land to meet future demands
- (b) supply water and protect catchments and streams
- (c) conserve native flora and fauna
- (d) meet the requirements of the State Electricity Commission of Victoria for the protection and operation of the Kiewa hydroelectric scheme as indicated in Recommendation A2 (j)

that

- (e) calibration of Slippery Rock Creek and Springs Creek catchments, to determine sediment bed-loads and turbidity under undisturbed conditions, continue until adequate data are obtained
- (f) the road from Big Hill past McKay Creek power station (with some minor reconstruction near the power station itself) be upgraded to a standard suitable for use by tourist vehicles, subject to the requirements of (e) above
- (g) no timber harvesting or construction of access for logging be permitted

and that it be unreserved Crown land withheld from sale, be protected forest under the provisions of the *Forests Act* 1958, and its use be reviewed by the Council in 1986.

U3 That the land (7,500 ha) in the Murray River headwaters indicated on the map be used to :

- (a) maintain the capability of the land to meet future demands
- (b) supply water and protect catchments and streams
- (c) conserve native flora and fauna
- (d) protect the wilderness values of the adjacent Kosciusko National Park

that

- (e) no timber harvesting or construction of access for logging be permitted

and that it be unreserved Crown land withheld from sale and be protected forest under the provisions of the *Forests Act* 1958 until its use is reviewed by the Council.

V. DEFENCE FORCES TRAINING

The Australian Army and the Royal Australian Air Force use the alpine area and the air space above it for training purposes.

The Army uses the public land for unit deployment exercises, communication and patrolling exercises, driver and recovery training exercises, and survival and adventure training. Two low-level jet routes traversing parts of the alpine area are used by R.A.A.F. jet aircraft on operational training. Military aircraft operating from East Sale use air space with a lower limit of 1,200 m over portions of the south-west.

Council believes that military training is a legitimate use of public land, but is aware of the possibility of conflicts arising with some forms of recreation, in particular wilderness recreation. It is Council's view that military training should not occur in reference areas, wilderness areas, and only under special circumstances in parks and other areas of recreation and conservation significance.

Recommendations

- V1** That where military training is conducted on public land :
- (a) the types of activities, and their timing and location, be subject to agreement between the appropriate defence department, the managing authority, and other relevant bodies such as the Soil Conservation Authority
 - (b) the training activities be carried out under conditions specified by the managing and relevant authorities, to minimize any detrimental effects
 - (c) the Forests Commission be consulted (for fire-protection purposes) with respect to training activities in protected forest and protected public land
 - (d) it be excluded from reference areas, from wilderness areas, and, except under special circumstances, from parks and other areas of special conservation significance
- V2** That the area proclaimed under the *Defence Act* section 69 and known as the Big River Training Area, to the south-west of Mount Terrible, continue to be available for military training purposes.

W. OTHER RESERVES AND PUBLIC LAND

Some small areas of public land in the study area that are used for various purposes such as water production, grazing, camping, and so on have not been specifically mentioned in these recommendations. Others (both reserved and unreserved) receive little active use at present even though they may once have been reserved for some specific purpose. The areas are sometimes cleared and, although their present value for recreation or conservation is limited, they may have considerable value in the future for as-yet-unknown public purposes.

The Council intends that existing legal uses and tenure of these small areas of public land should continue, and that those not currently used for any particular purpose be used in a way that will not preclude their commitment in the future to some specific public use.

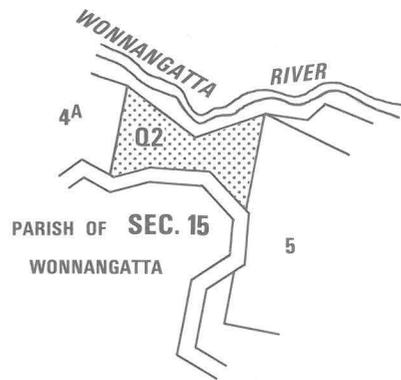
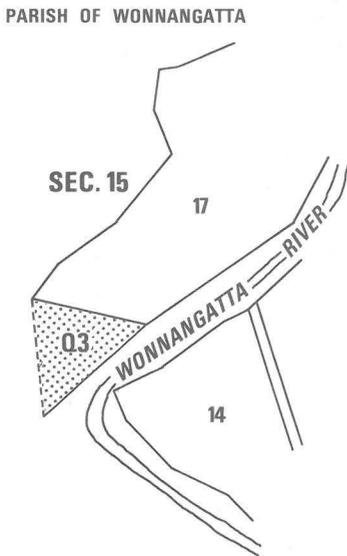
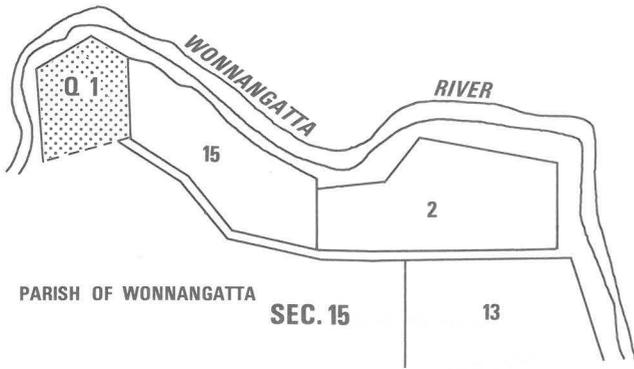
Recommendation

W1 That for small areas of public land not specifically mentioned in these recommendations, existing legal uses and tenure continue and that

where the land is not used for a specific purpose at present, such areas be used in a way that will not preclude their reservation in the future for as-yet-unknown public purposes and managed as if they were uncommitted land.

AGRICULTURE Q1-Q3
WONNANGATTA

MAP 1

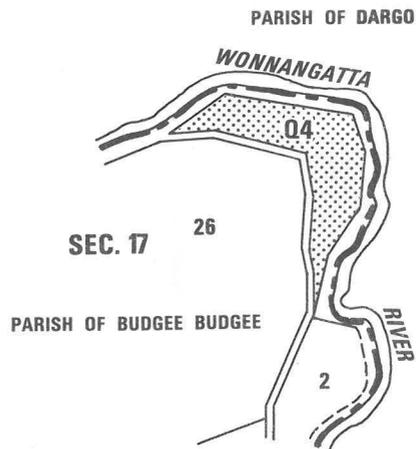


PUBLIC LAND RECOMMENDED FOR ALIENATION

SCALE 1:25 000

**AGRICULTURE 04
BUDGEE BUDGEE**

MAP 2

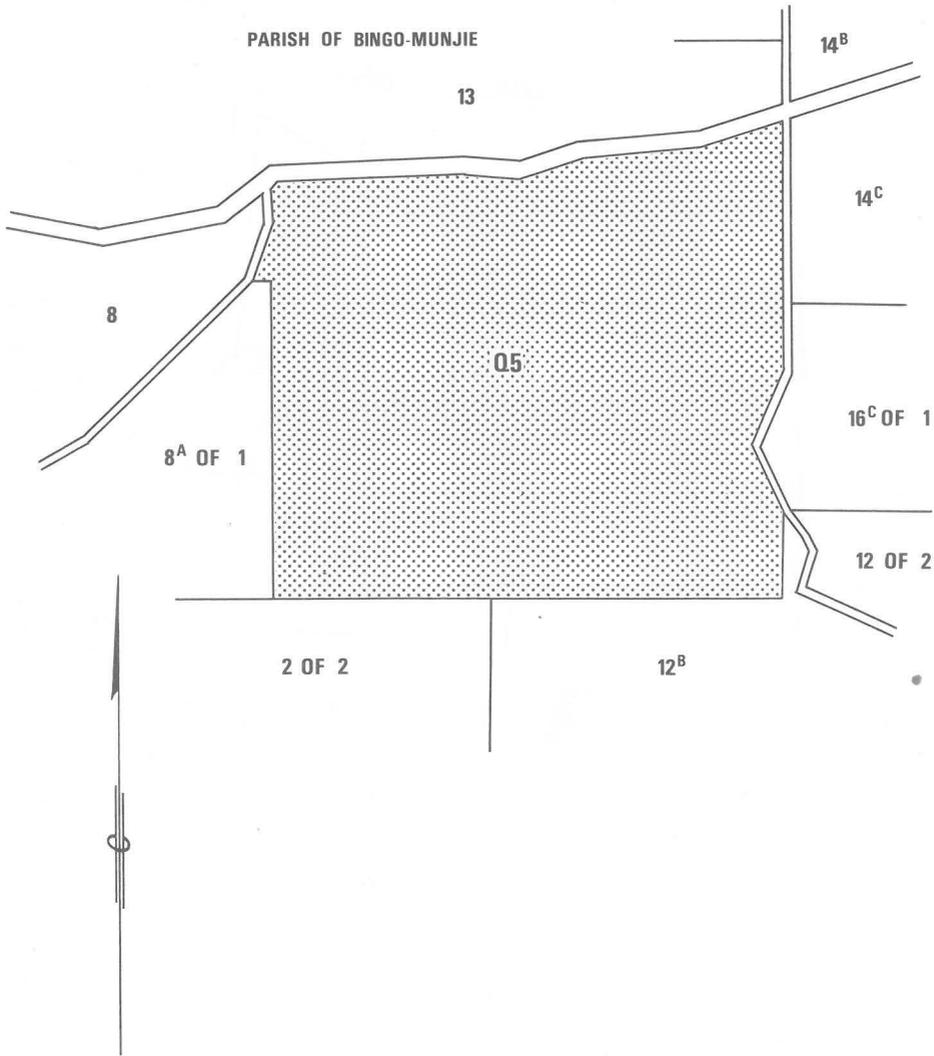


PUBLIC LAND RECOMMENDED FOR ALIENATION

SCALE 1:20 000

**AGRICULTURE Q5
BINGO-MUNJIE**

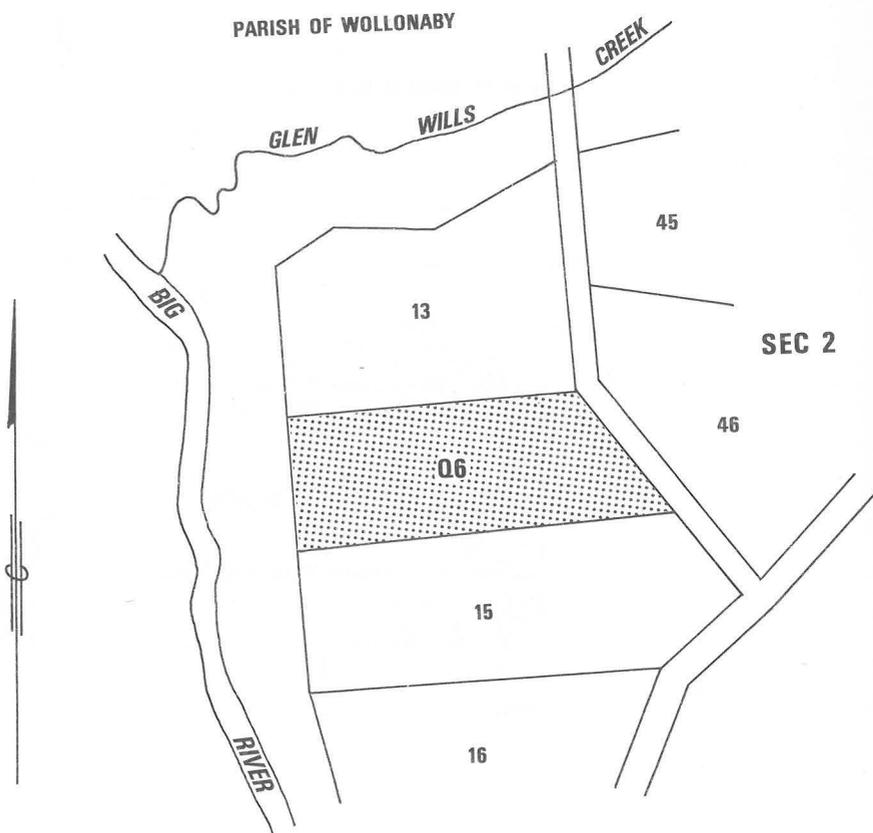
MAP 3



PUBLIC LAND RECOMMENDED FOR ALIENATION

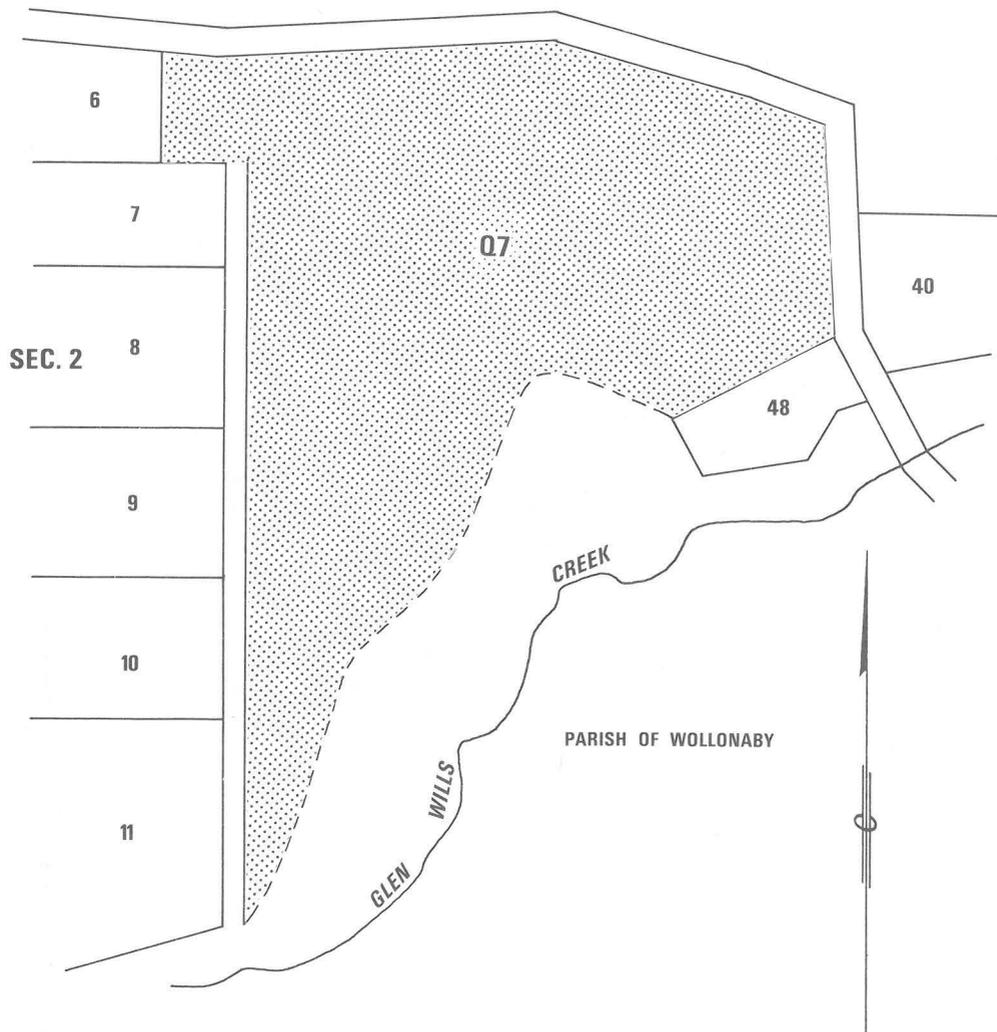
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WOLLONABY



PUBLIC LAND RECOMMENDED FOR ALIENATION

WOLLONABY

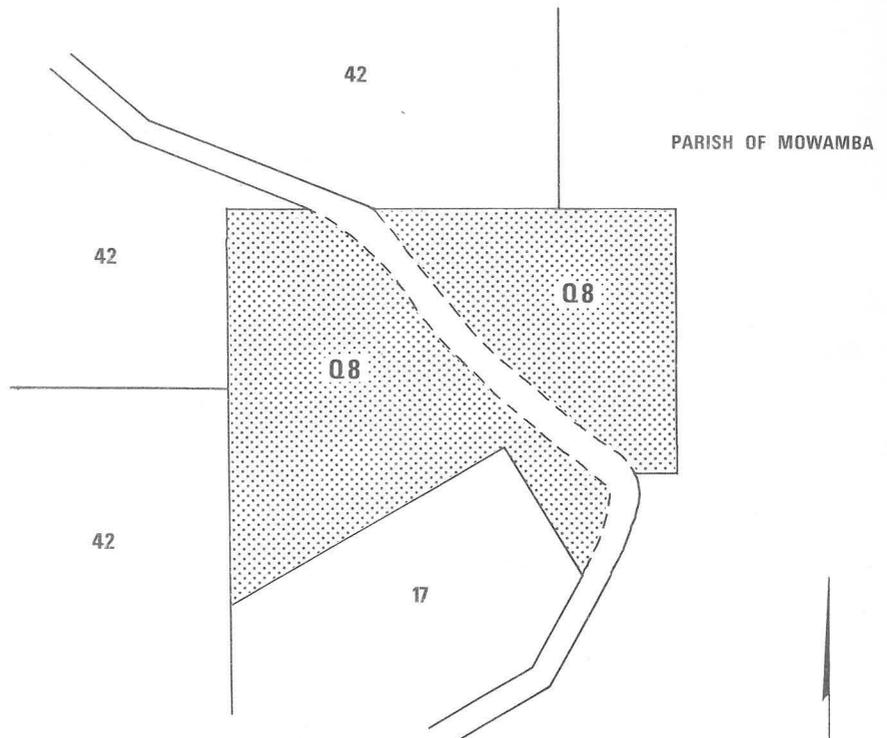


PUBLIC LAND RECOMMENDED FOR ALIENATION

SCALE 1:10 000

**AGRICULTURE Q8
MOWAMBA**

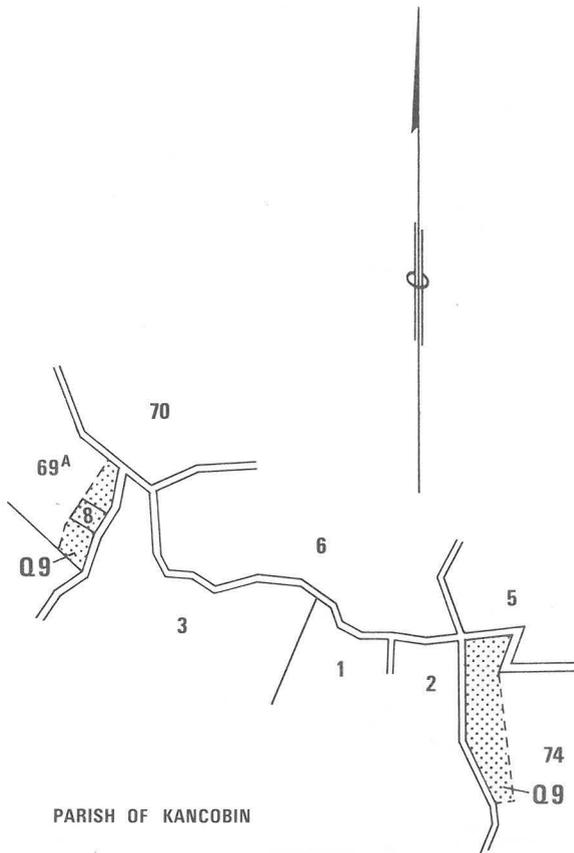
MAP 6



PUBLIC LAND RECOMMENDED FOR ALIENATION

SCALE 1:20 000

KANCOBIN



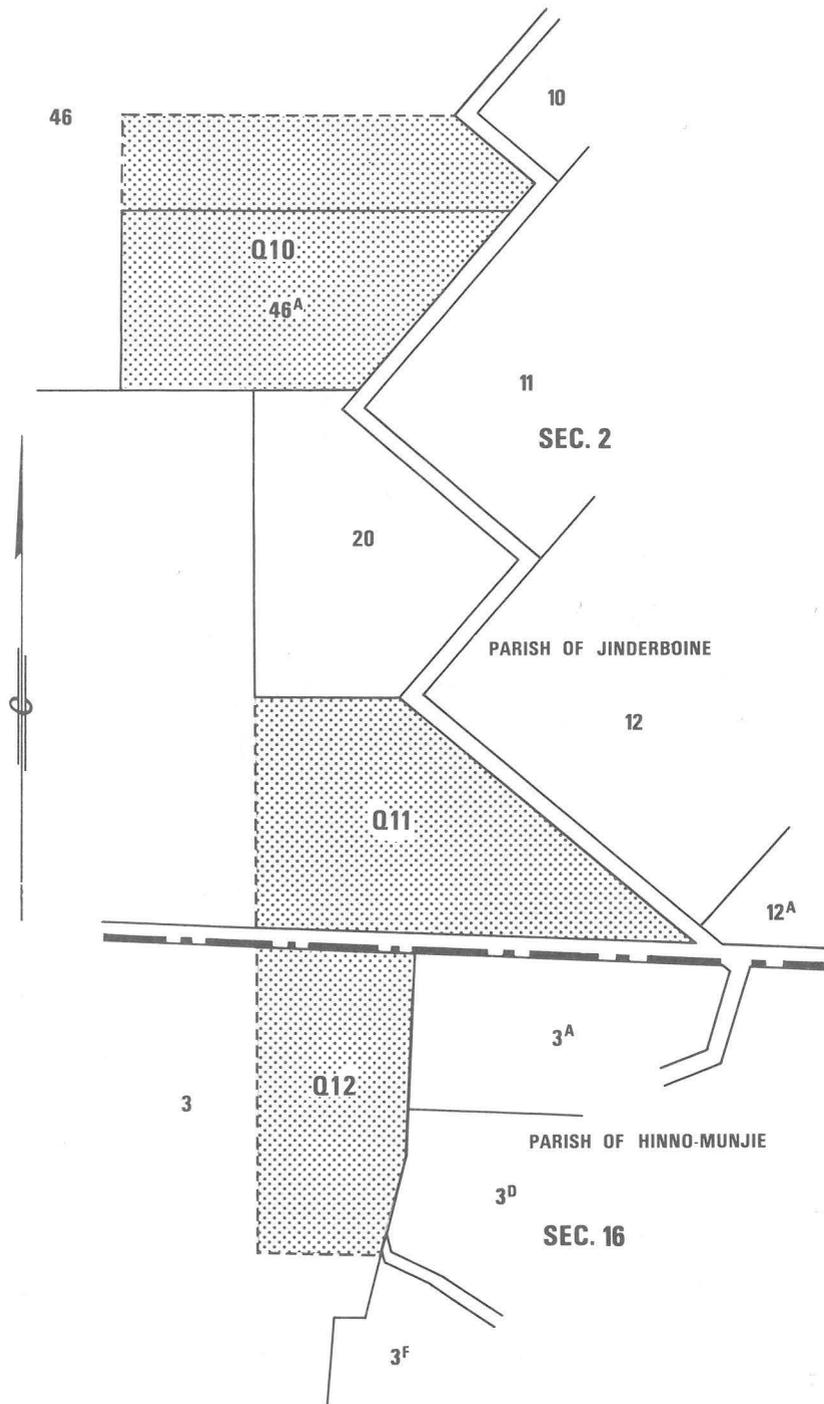
PARISH OF KANCOBIN



PUBLIC LAND RECOMMENDED FOR ALIENATION

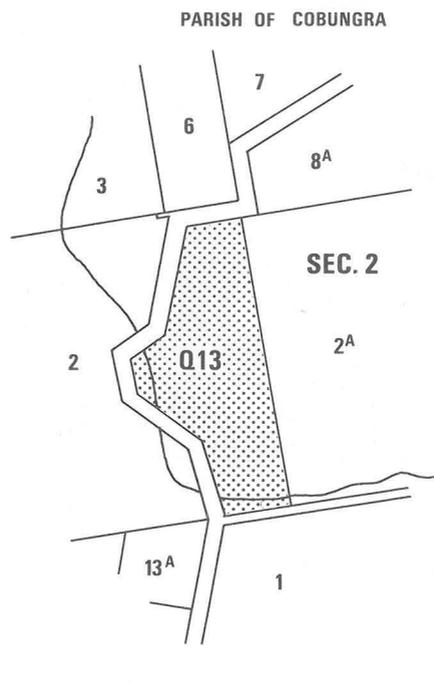
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JINDEBOINE - HINNO-MUNJIE



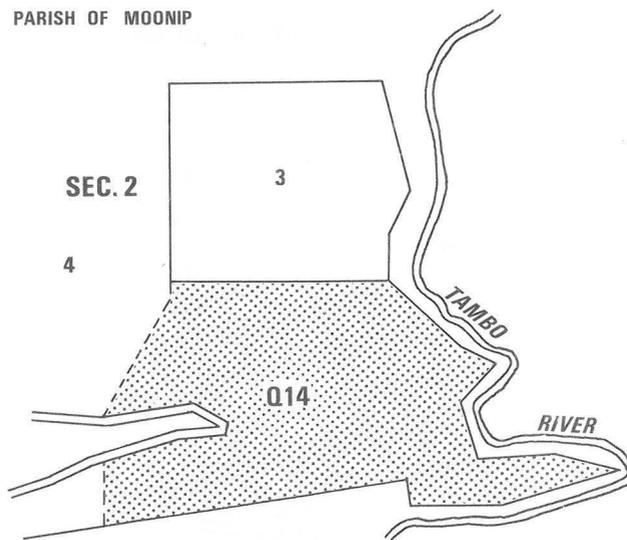
PUBLIC LAND RECOMMENDED FOR ALIENATION

COBUNGRA



PUBLIC LAND RECOMMENDED FOR ALIENATION

MOONIP

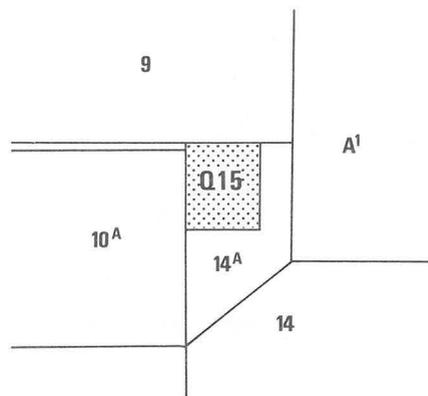


PUBLIC LAND RECOMMENDED FOR ALIENATION

AGRICULTURE Q15
GELANTIPY EAST

MAP 11

PARISH OF GELANTIPY EAST

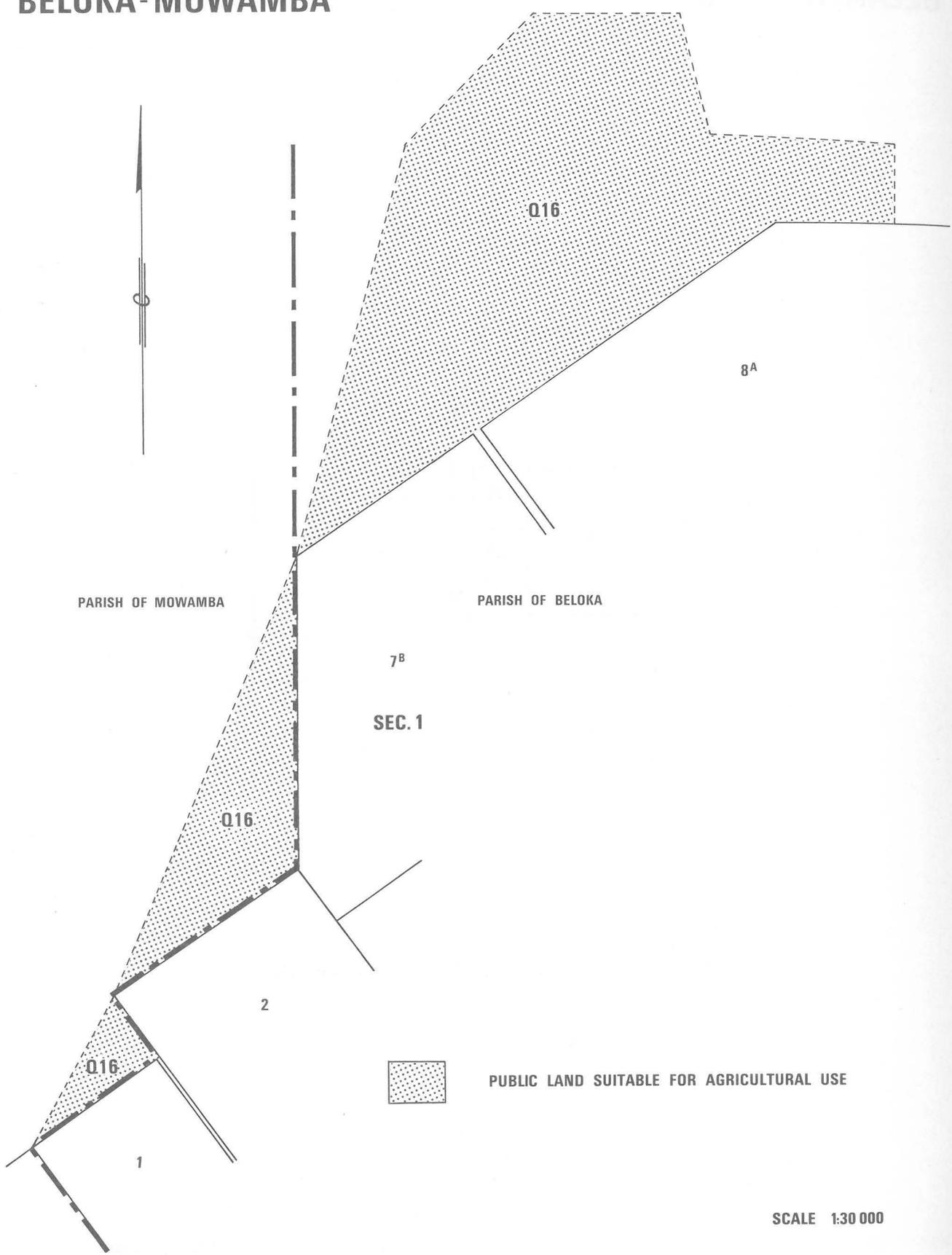


PUBLIC LAND RECOMMENDED FOR ALIENATION

SCALE 1:20 000

AGRICULTURE Q16
BELOKA-MOWAMBA

MAP 12



PARISH OF MOWAMBA

PARISH OF BELOKA

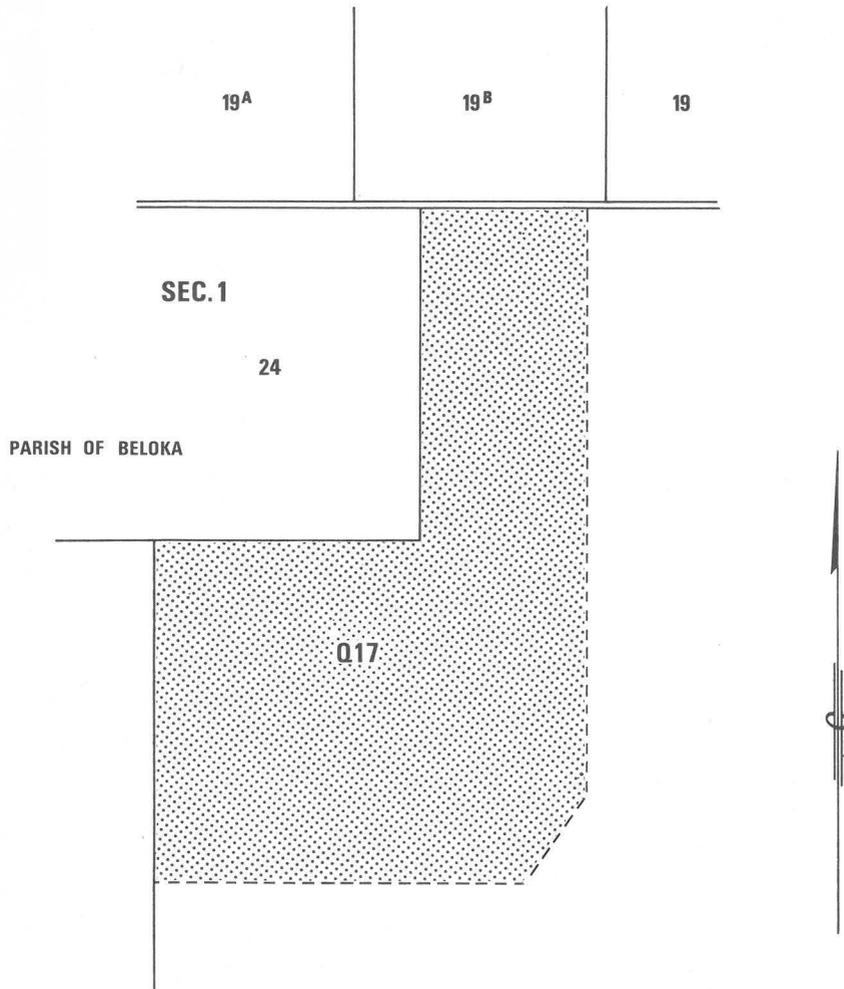
7^B
SEC. 1

8^A

PUBLIC LAND SUITABLE FOR AGRICULTURAL USE

SCALE 1:30 000

BELOKA



PARISH OF BELOKA



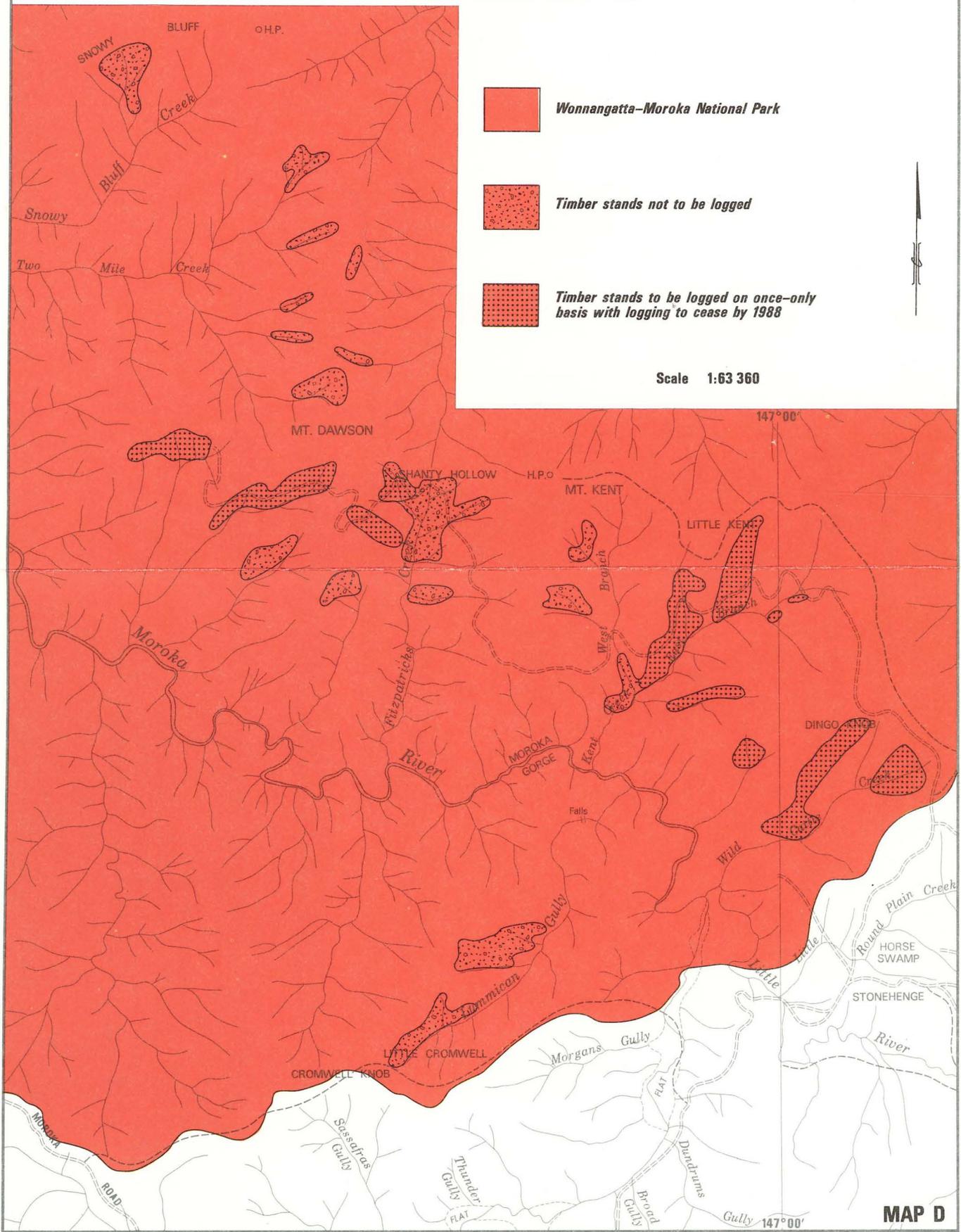
PUBLIC LAND SUITABLE FOR AGRICULTURAL USE

FINAL RECOMMENDATIONS

LAND CONSERVATION COUNCIL
VICTORIA

ALPINE AREA

WONNANGATTA-MOROKA NATIONAL PARK
(SNOWY BLUFF-CROMWELLS KNOB SECTOR)



FINAL RECOMMENDATIONS

LAND CONSERVATION COUNCIL
VICTORIA
ALPINE AREA



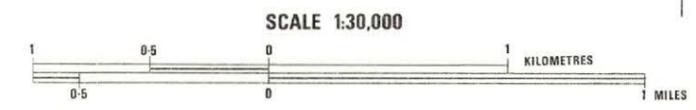
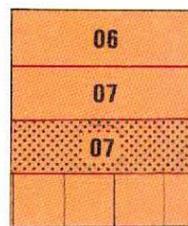
ALPINE RESORTS

MT. BULLER

MT. STIRLING

ONCE-ONLY LOGGING

NO GRAZING -
AREA CURRENTLY WITHDRAWN
FROM GRAZING



SCALE 1:30,000

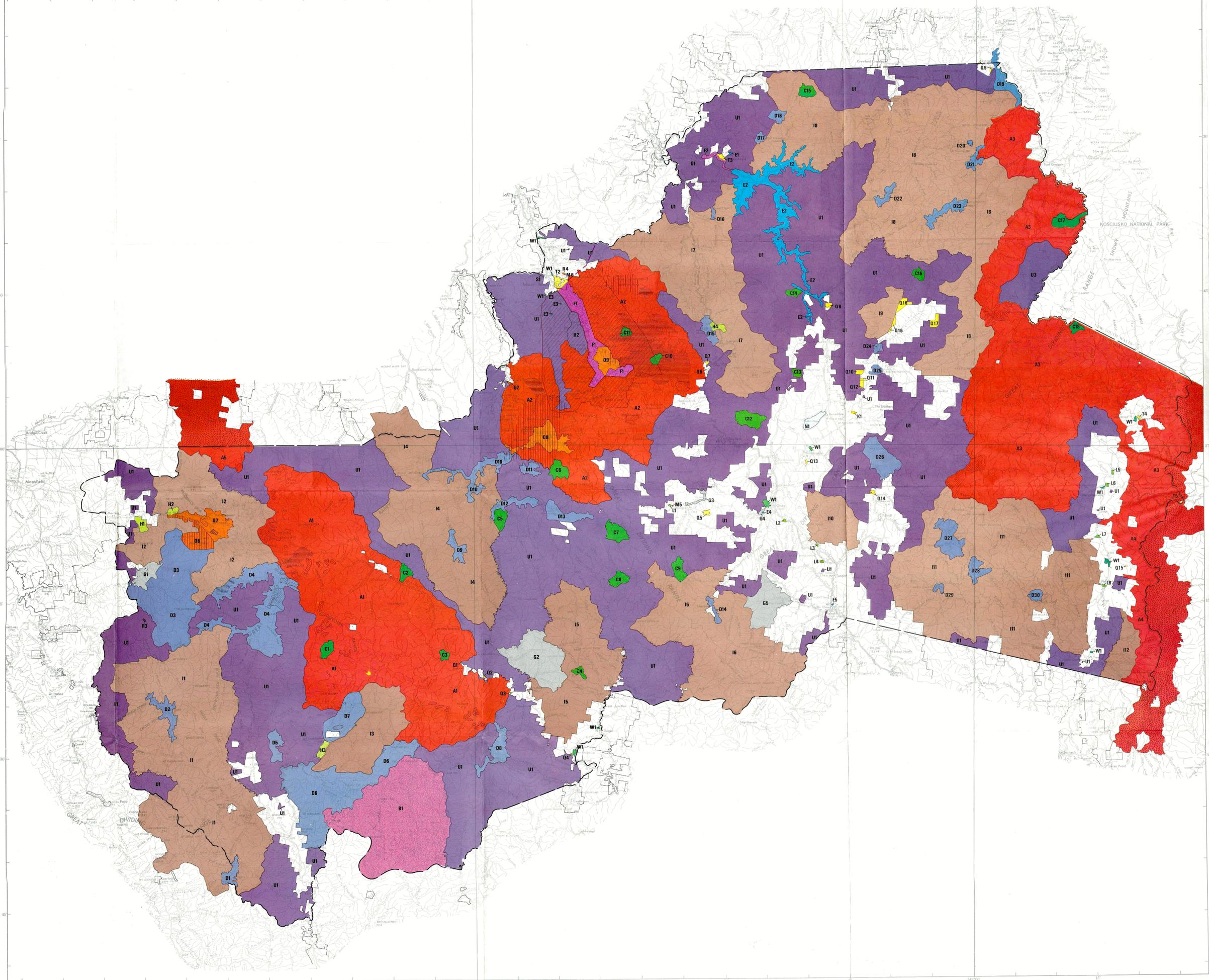
CONTOUR INTERVAL 50 FEET

FINAL RECOMMENDATIONS

LAND CONSERVATION COUNCIL
VICTORIA

ALPINE AREA

MAP A



NATIONAL PARK	A1	Wonnangatta-Meroka	A3	Cobblers-Tingaringy
	A2	Whanga	A4	Snowy River
STATE PARK	A5	Whanga Plateau		
WILDERNESS	B1	Aren		
REFERENCE AREA	C1	East Caladonia	C7	Lagoon Plateau
	C2	Wonnangatta River	C8	Shoalwater Creek
	C3	Mount McAdam	C9	Spring Creek
	C4	Thirteen Mile Spur	C10	Hollands Knob
	C5	Blue Rag	C11	Whitlock Creek
	C6	Buller Plain	C12	Bursside
NATURAL FEATURES AND SCENIC RESERVE	D1	Mount Useful	D11	Mount Frazzout
	D2	Mount Sheen	D12	Blue Flag Range
	D3	The Governor	D13	George High Plains
	D4	The Bluff-Mount Clear	D14	Livingstone Creek
	D5	The Crinoline or Mount Liger	D15	Mount Wills
	D6	Trappard Hill-Tail Ranges	D16	Granite Peak
	D7	Benison	D17	Mount Beambra
	D8	Pinnacles-Castle Hill	D18	Mount Cravenville
	D9	Mount Searles	D19	Mount Searles
	D10	Berry Mountains	D20	Thouglie headwaters
D21	Pinnibar	D22	Wild Bear Range	
D23	Mount Gibbo	D24	Bombra Creek Cascades	
D25	Macfarlane Lookout	D26	Mount Tombo	
D27	Narrowing Plains	D28	Benetton	
D29	Benetton	D30	Mount Stewart	
WATER PRODUCTION	E1	Mount Taber Creek	E3	West Kiwa-Simmonds Creek
	E2	Dartmouth Reservoir	E4	Livingstone Creek
	E5	Tombo River		
HYDROELECTRICITY PRODUCTION	F1	Kiwa	F2	Dartmouth
HISTORIC AREA	G1	Howqua Hills	G3	Victoria Falls
	G2	Grant	G4	Oriental Claims
	G5	Cassilis		
EDUCATION AREA	H1	Osborne	H3	Mount Tamboritha
	H2	Mount Russell	H4	Sunside
HARDWOOD TIMBER PRODUCTION	I1	Barkly-Goulburn	I5	Mount Ewan
	I2	Howqua-King	I6	Ballinacraig-Pilgusa
	I3	Carry River	I7	Snowy Creek-to-Kauckar
	I4	Shelley-Tea Tree	I8	Pinnabar-Pendergast
FLORA AND FAUNA RESERVE	K1	Morass Creek	I9	Brinke Range
			I10	Spittles Range
BUSHLAND RESERVE	L1-L8	Various	I11	Narrowing-Timberra
			I12	Black Slaty Creek
STREAMSIDE RESERVE	M5	Victoria River	M6	Kiwa River
LAKE RESERVE	N1	Lake Onno		
RECREATION	O2	Horrieville	O6	Mount Buller
	O3	Alpine Resort	O7	Mount Sirling
	O8	Mount Nelson	O9	Falls Creek
AGRICULTURE	Q1-Q17	Various		
MINERAL AND STONE PRODUCTION	R3	Werrambet slate quarry	R4	Werrambet gravel reserves
UTILITIES AND SURVEY	S1	Existing transmission lines		
		Approximate route of Dartmouth-Mt. Beauty transmission line as approved by the government.		
TOWNSHIP LAND	T2	Mount Beauty	T4	Suggan Buggan
	T3	Dartmouth village	T5	McKillops Bridge
UNCOMMITTED LAND	U1	Various	U3	Murray headwaters
	U2	East Kiwa		
OTHER RESERVES AND PUBLIC LAND	W1	Various		
		Recommended parks adjoining the Alpine Area		
		Area of importance for the operation and protection of the Kiwa hydroelectric scheme. (see text)		
		Once-only logging - logging to cease 1988 except for A4 where logging to cease by 1983 (see text)		
		No grazing - area currently withdrawn from grazing (see text)		
		No grazing - grazing to be phased out by 1988 (see text)		

¹ Other areas where there is to be no grazing are covered by Recommendations A4 (Snowy River National Park), A5 (Whanga Plateau State Park), B1 (Aren Wilderness), C1 to C5, and C12 to C18 (Reference Areas) - see text.

STUDY AREA BOUNDARY

