

FINAL RECOMMENDATIONS

**SOUTH-WESTERN AREA
DISTRICT 2**

**LAND CONSERVATION COUNCIL, VICTORIA
MELBOURNE, MAY 1982**

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CONTENTS

	PAGE
Introduction	5
A. The Grampians	12
B. State and Regional Parks	20
C. Reference Areas	28
D. Wildlife	31
E. Water Production	39
F. Hardwood Production	47
G. Historic Reserves	51
H. Flora Reserves and Flora and Fauna Reserve	53
I. Bushland Reserves	57
J. The Coast	64
K. Rivers and Streams	66
L. Roadside Conservation and Highway Parks	74
M. Education Areas and School Plantations	78
N. Lake Reserves	81
O. Recreation	84
P. Scenic Reserves	88
Q. Agriculture	90
R. Mineral and Stone Production	92
S. Utilities and Survey	99
T. Township Land	102
U. Uncommitted Land	103
V. Military Training	105
W. Other Reserves and Public Land	106
Map A The Study Area 1:250 000	Follow text
Maps 1-5 Supplementary Maps	

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 South-western Area, District 2. 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 4 February 1976, and in local and other Victorian newspapers in February 1976. A descriptive report was published on 9 May 1979. The Council received 343 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 district. Extracts from the *Land Conservation Act 1970* covering the procedure to be followed in formulating recommendations, were included in the descriptive report.

After considering these submissions, and having visited the study area, the Council formulated its proposed recommendations, which were published on 14 September 1981. The Council subsequently received 1546 submissions commenting on these proposals. After due consideration, the Council now presents its final recommendations.

The recommendations in the text are grouped under major headings, such as Parks, Hardwood Production, and so on. The text is accompanied by a map (map A) at the scale of 1:250 000, which covers the whole study area and gives a broad view of the recommended land uses. Other detailed maps, with the text, show areas recommended for agriculture (by alienation). More detailed information on many of the boundaries is held by the Land Conservation Council.

Land uses

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

Many of the submissions expressed the wide polarity of views on land use in the Grampians. The Council has recommended that the area containing the main ranges of the Grampians should become a national park. It is also recommended that the Black Range, which complements the important natural and archaeological features of the Grampians, be a State Park, and that the balance of the land, which contains commercial-quality durable-species forests, should remain as State forest.

The Council has also recommended the establishment of three additional State parks and a regional park in areas of particular importance for recreation and nature conservation; reference areas and education areas—covering a range of land types found in the study area; and flora reserves for areas of importance for the conservation of representative plant communities. Wetlands throughout the area are included in either wildlife reserves—where faunal values dominate—or lake reserves—where a number of uses are important. Substantial areas are recommended for hardwood timber production—a land use that will also continue in the Grampians region.

Table 1 summarizes the proposed recommendations in terms of the major forms of use.

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
Grampians National Park	166 000	11	49
State parks	24 430	2	7
Regional park	1 000	<1	< 1
Grampians State forest	33 600	2	10
Hardwood production	30 580	2	9
Reference areas	3 375	<1	1
Wildlife reserves	7 660	<1	2
Water production	18 945	1	6
Historic reserves	12	<1	< 1
Flora, and flora and fauna reserves	8 902	<1	3
Bushland reserves	2 985	<1	< 1
Coastal reserve	415	<1	< 1
Streamside reserves	1 024	<1	< 1
Highway parks	180	<1	< 1
Education areas	1 275	<1	< 1
Lake reserves	2 711	<1	< 1
Scenic reserves	1 867	<1	< 1
Agriculture	1 233	<1	< 1
Mineral and stone reserves	443	<1	< 1
Uncommitted land	25 095	2	7
Areas for revegetation	237	<1	< 1

All other land uses collectively make up the balance.

Figures are rounded.

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.

General Recommendations

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

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 recognizes that vermin and noxious weeds pose problems in the management of public land. Finance and staff are required to research and implement methods for control of pest species. Council therefore recommends:

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

The Council has previously proposed certain additional arrangements for protecting public land from fire. These arrangements have now been incorporated into an amendment to the *Forests Act 1958*. The amendment creates the designation 'protected public land', which may include public land that is not State forest or national park. The Forests Commission is now required to protect all three of these from fire. The following statement outlines the responsibilities for fire-protection on public land:

- (a) Under the provisions of the *Forests Act 1958* and notwithstanding anything to the contrary in any other Act, it is the duty of the Forests Commission to suppress fires in every State forest and national park, and on all protected public land. This includes, for example, all land under the management and control of the National Parks Service.
- (b) In the event of fire in any area for which the Forests Commission has fire-suppression responsibility, the Forests Commission has powers of entry under both the *Forests Act 1958* and the *Country Fire Authority Act 1958*. Decisions as to the most appropriate course of action required to suppress the fire, and as to the most appropriate equipment to be used, are the responsibility of the Forests Commission alone.
- (c) The Forests commission provides the State with an efficient fire-prevention and suppression organization. The fire-fighting resources of the National Parks Service are available to the Commission for fire suppression operations, and are used as such under the direction of the Forests Commission. They are used in conjunction with, and not as a replacement for, the resources of the Commission.
- (d) Fire-prevention works in State forests are the sole responsibility of the Forests Commission. In parks, on land reserved under section 4 of the *Crown Land (Reserves) Act 1978*, and on protected public land, however, fire-prevention works are undertaken only with the agreement of the person or body that manages the land.
- (e) To facilitate co-operative arrangements for fire prevention in areas under the management and control of the National Parks Service, the Service and the Forests Commission have established a joint fire-protection committee.
- (f) In addition, under the *National Parks Act 1975*, the Director of National Parks shall ensure that proper and sufficient measures are taken to protect each national park, and other parks managed by the National Parks Service, from injury by fire.
- (g) The two organizations that share the duty of fire-prevention and suppression in rural Victoria, namely, the Forests Commission and the Country Fire Authority, have excellent arrangements for mutual co-operation, which have operated successfully for many years.

Accordingly, the Council recommends:

- II That, for fire-protection purposes, public land that is not State forest or national park be examined, and appropriate areas be declared protected public land under the *Forests Act 1958*.
- III That mineral exploration licences held over the area continue except in so far as they affect reference areas.

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

- IV That, when significant new discoveries are made on land within their administration, government agencies enlist the best advice available on the importance of such discoveries and how they should be managed. Advice from organizations other than government authorities and academic institutions should be sought whenever appropriate.

The Council also recognizes that in some cases existing legislation will have to be amended in order to effectively implement the recommendations in this report. The Council is 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 delay period. 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. The Council therefore recommends:

- V 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.
- VI That, as the boundaries of many areas have not been precisely surveyed, they be subject to minor modification, road excisions, easements, and other adjustments that may be necessary.
- VII That in cases where occupation does not agree with title, the Department of Crown Lands and Survey may at its discretion make adjustments to boundaries of public land when implementing these recommendations.
- VIII That the recommendations in this publication do not change the status of roads passing through or abutting public land that are at present declared roads under the *Country Roads Act* 1958.
- IX That, where areas of public land are not specifically referred to in these recommendations, present legal uses and tenure continue.

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.

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 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 major land types 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 flora, fauna, and other natural features. Regardless of which authority is the manager, the State parks recommended by the Council are intended to complement the national parks so that together they form a State-wide system.

Regional park

An area of public land, readily accessible from urban centres or a major tourist route, set aside primarily to provide recreation for large numbers of people in natural or semi-natural surroundings.

These parks would be intensively developed for informal recreation and could include road systems. Although natural beauty would enhance their value, closeness to an urban centre is more important than natural attributes. Other uses—such as timber-harvesting, fossicking, and stone extraction—may be permitted where they are compatible with the primary use.

Multi-purpose park

An area of public land set aside to provide recreation and education in natural surroundings, in which other activities such as water production, hardwood timber production, stone extraction, and hunting or grazing, are permitted where these form a part of, do not substantially conflict with, or supplement the primary object.

Victoria contains areas where, although recreation is an appropriate primary use of land, it is not desirable, economically possible, or necessary to wholly exclude other uses that would be unacceptable in national or State parks.

PARK MANAGEMENT

It should be emphasized that all parks are available for public use. An essential aim in their reservation is to provide for the enjoyment of the public, and as such public access will be maintained. Indeed, additional access may be provided to interesting areas by way of nature trails and walking tracks.

Council recognizes that wildfires, however caused, must be prevented from threatening life, property, and natural resources in the State. The measures necessary to control wildfires must be taken in parks as in other areas.

In the event of fire in any park, decisions as to the most appropriate course of action required to suppress the fire, and the most appropriate equipment to be used are the responsibility of the Forests Commission alone. The fire-fighting resources of the park

management authority are available to the Commission for fire-suppression operations, and are used under the direction of the Forests Commission in conjunction with, and not as a replacement for, the resources of the Commission.

The classification of land as a park does not restrict the use of any necessary fire-suppression measures.

Fire-prevention measures such as maintenance of fire access tracks and protective burning will also be required in those areas of parks that have strategic importance for fire control. The particular measures to be taken in individual parks will be incorporated in fire-protection plans prepared by the Forests Commission in consultation with the park management authority.

In all parks the suppression of fires remains the responsibility of the Forests Commission, even in those parks where the Commission is not the management authority.

The two organizations that share the duty of fire prevention and suppression in rural Victoria—namely, the Forests Commission and the Country Fire Authority—have excellent arrangements for mutual co-operation that have operated successfully for many years.

Vermin and noxious weeds within parks will be controlled. This will remain the responsibility of the Department of Crown Lands and Survey. Control measures will be taken by both the park managers and the Department, using methods decided upon jointly by the two parties.

Current legal access will continue to be available to freehold land enclosed within any of the recommended parks.

A. THE GRAMPIANS

The spectacular ranges of the Grampians, rising steeply out of the flat, open grasslands of the western plains, form a distinctive and notable landscape.

The large area of forested land, the combination of unusual geological features, rugged topography, and scenic grandeur, and the rich variety of native flora and wildlife habitat give this land mass national conservation significance.

A number of uses add to the area's significance. A large number of people rely on the water supplied from the Grampians for domestic, stock, and irrigation purposes. There is potential for further development of this resource. The ranges attract hundreds of thousands of visitors from Victoria and interstate each year. A small, but locally important timber industry is supplied from the native forests and softwood plantations. The area is used extensively by the beekeeping industry, and the woodlands to the west provide grazing for stock. Building stone is extracted from the Heatherlie quarry, and a number of gravel pits throughout the Grampians supply road-making material.

The ranges include areas of historical, archaeological, and geological importance, and provide an educational resource for a variety of interests. A portion is used regularly as a military training area for non-intensive exercises.

The Grampians therefore have many uses and values and the Land Conservation Council considers that these uses should continue to be provided for, while still protecting and recognizing the conservation significance of the area. In the following recommendations, the Council has attempted to achieve a balance between the various demands that have been and will be placed on public land in the Grampians.

The Council has recommended that the Grampians proper—the Mount William, Mount Difficult, Serra, and Victoria Ranges and their associated lowlands—should be reserved as a national park. The Black Range, the western outlier of the Grampians land mass, which contains geological, archaeological, and botanical features complementing those of the Grampians, should be reserved as a State park; while the balance of land, which contains commercial-quality durable-species forests, should remain as State forest. (The two softwood plantations will remain reserved for timber production.)

On acceptance of the recommendations, the park should be included on the Schedule to the *National Parks Act 1975*, but management responsibility should pass to the National Parks Service only when the necessary funds and other resources are available.

A1 GRAMPIANS NATIONAL PARK

The recommended national park (of some 166 000 ha) includes the whole of the contiguous block of public land that incorporates the main Grampians ranges and associated foothills and plains.

The combination of spectacular scenery, diverse and significant flora and fauna, and unique archaeological sites included in this park have long caused the Grampians to be regarded, throughout Australia, as an area of the highest conservation significance. Special attributes and many of the uses of the area are described in detail below.

Conservation of natural and archaeological features

The Grampians owe their form to the interaction of rock type, geological structure, and weathering. Spectacular cliffs, sandstone bluffs, and jagged ranges (such as Mount Sturgeon, Mount Abrupt, and the rugged Serra Range) are often backed by broad, gently sloping areas of bare sandstone and mudstone (such as the Major Mitchell Plateau). The rocky outcrops and peaks provide many lookout points from which spectacular views can be obtained. Such rugged land forms contrast with the gentler and rounded terrain developed on the granitic areas in Victoria Valley and the extensive alluvial flats along the Moora Moora valley.

Geological history, the range in elevations, physiography, soil types, and climate have produced a great diversity of environments and habitats throughout the area; and the resulting biogeographical combinations are a highly valuable educational resource. The isolation of the ranges by the surrounding plains for millions of years has allowed the development of certain characteristics, especially floristic, that set the Grampians aside from other parts of the State.

Containing as they do about one-third of the State's indigenous flora, the Grampians have been described as a 'floral wonderland'. Of the 1000 species of native plants recorded there, 20 are endemic to the area and 185 species are either rare or of disjunct distribution. Forest types range from low heaths to tall wet-sclerophyll forests in some of the more sheltered gullies. They include low open shrublands of snow gum and the endemic Grampians gum on the Major Mitchell Plateau, river red gum woodlands, and many swamplands.

Large areas of the Grampians are renowned for their brilliant Spring displays of wildflowers. These colourful and extensive displays have few rivals anywhere in the State. In fact, the Grampians' wildflowers are acclaimed throughout Australia and each year attract many thousands of visitors to the area from both within Victoria and interstate.

Great floristic and structural diversity, coupled with the unique and/or colourful nature of many species, combine to make this park an area of the utmost significance for the conservation of the State's native flora. Indeed, the Grampians National Park could perhaps be the single most important botanical reserve in Victoria.

The wide diversity of habitat offered by the streams, heaths, forests, and rocky outcrops support many faunal populations. Species of particular significance include the rare brush-tailed rock wallaby, which has its only known western Victorian colony in the north of the Victoria Range, the relatively large breeding population of the internationally rare peregrine falcon, squirrel gliders east of Mount Zero, powerful owl and southern emu-wren, and a disjunct population of the crescent honeyeater.

The heaths of Victoria Valley are significant, as they contain the State's northernmost populations of heath rat. The rare mourning skink has been collected in Victoria Range and large numbers of the smoky mouse, not commonly found elsewhere in the State, are found on the Major Mitchell Plateau.

The Grampians contain the most diverse macropod fauna (kangaroo and wallaby) in the State (five species have been identified there) and include the major part of the Victorian overlap of the range of eastern and western grey kangaroos.

In Victoria, rock paintings of Aboriginal origin are quite rare; indeed, they have been located in only a handful of areas. Of the presently known sites in the State, 80 per cent. (containing the best examples of this art form) have been found in the Grampians area; the great majority of these are located within the recommended national park.

Water production

Supply of water for low-rainfall areas in the west and north-west of the State is the Grampians' most important single use. The vast, relatively dry area extending north from the Grampians to Robinvale, Swan Hill, and Charlton has a high agricultural potential. It contains 48 townships (including Horsham and Ouyen) and some 10 000 farms, which all depend on Grampians water for their stock and domestic water supply, supplemented only by roof-fed tanks. The water resources in the Grampians are intensively harvested and distributed to the north through an extensive system of channels and storages, the elevation of the ranges allowing the system to be largely gravitational.

Wartook Reservoir and Lakes Bellfield, Fyans, and Lonsdale store water from Wimmera River tributaries rising in the Grampians. Rocklands and Moora Moora Reservoirs store Glenelg River water from Grampians catchments for diversion across the Divide into the northern channels. A small area of Wannon River headwaters also provides additional catchment for Lake Bellfield.

In addition to the channel system, the cities and towns around the Grampians (for example, Hamilton and Stawell) obtain their high-quality domestic water supplies from streams rising in the ranges. The area is also an important source of potable groundwater, which is used by a number of towns along the eastern and southern margins of the Grampians.

Land management of the Grampians must continue to make provision for this most important use. Specific recommendations concerning water production are outlined in Chapter E (Water Production).

Recreation

The scenic grandeur, spring wildflower displays, wildlife, waterfalls, rock formations, Aboriginal rock paintings, and lakes make this one of Victoria's most important outdoor recreation areas, attracting hundreds of thousands of visitors each year. They pursue a wide variety of recreational activities, including rock-climbing, bushwalking, nature study, camping, pleasure driving, picnicking, and fishing.

Vehicular access throughout the area is achieved on a system of sealed main roads and a network of secondary roads and tracks. A number of walking tracks provide access to some of the more popular features. The existing road network and access to popular features should be maintained.

The Grampians contain some of the State's most highly regarded bushwalking areas. These range from the heavily used system of tracks among the chasms and cliffs of the Wonderland area to the Victoria Range, which offers a more remote bushwalking experience.

Rugged cliffs and bluffs make the area very popular for rock-climbers. Indeed, enthusiasts consider Mount Rosea to be second only to Mount Arapiles as the State's most important rock-climbing venue.

The area also contains important relics of early European occupation, such as the site of the police camp at Troopers Creek which was established to protect travellers using the coach route through Roses Gap—and especially the stone buildings, walls, and rock faces at the Heatherlie quarry.

The progress of the European exploration and settlement is recorded in the legacy of names of many of the features and in the occurrence of several gold-mining sites throughout the area.

Timber

The mixed-species forests, durable-species woodlands, and softwood plantations of the Grampians region supply housing, heavy construction, and farming timbers to the western part of the State. Although small when compared with other sawmilling centres, the industry dependent on this area is an important local employer.

The more productive mixed-species forests—which supply timbers for house framing and general construction—are generally located on the sheltered south-eastern aspects of the Grampians: adjacent to the Victoria and Serra Ranges, at Mafeking near the Major Mitchell plateau, and south of Mount Difficult—all within the recommended national park.

In recognition of the local importance of the sawmilling industry, the Land Conservation Council considers it necessary to allow timber production to continue within the park from those zones indicated on the map. However, for three of these zones (indicated separately on the map) timber extraction should be phased out within 10 years of the inclusion of the park on the Schedule to the *National Parks Act 1975*. Timber production from the other zones within the park should be reviewed 15 years after the inclusion of the park on the Schedule.

All operations related to timber-getting and to regeneration and other silvicultural works within the timber-production zones shall remain the sole responsibility of the Forests Commission—who will continue to ensure the protection of important scenic, recreational, and conservation values that may be identified within or adjacent to these zones.

Agriculture

Licensed grazing was excluded from the ranges of the Grampians and from the Victoria Valley following the 1946 Royal Commission into forest grazing. The practice continues, however, under a system of licences and agistments on the margins of public land and in the durable-species woodland to the west of the recommended park.

Honey Production

The dependable flowering of high-nectar-yielding plant species makes the Grampians most important to the beekeeping industry. A large number of permanent and temporary bee sites are located throughout the area, the most valuable sites for honey production being in the gum and box eucalypt forests (durable species).

Protection and maintenance of mature trees and allied native flora, and ample water supplies are essential requirements for honey production and bee breeding.

Other uses

Road-surfacing material is obtained from a number of sites throughout the Grampians and limited quantities of construction stone—used for maintenance work on buildings—is extracted under licence from the historic Heatherlie quarry. Gold has been mined in the past at Mafeking and in the headwaters of Stony Creek.

A portion of the ranges is used regularly as a military training area for map-reading and other non-intensive exercises.

Fire

The Grampians are extremely fire prone, both from lightning strikes and from other sources, and many landholders have expressed concern at the possibility of fire spreading from the ranges into adjoining farmlands. The most extensive vegetation types represented in the ranges are the highly flammable and low-crowned stringybark forests, scrub, and heaths. Fires can develop rapidly under the influence of the strong winds that often occur during the hot, dry summers.

An outline of the responsibilities for fire-protection on public land is included with the General Recommendations at the beginning of this report. However, the distribution of merchantable forest means that the zones delineated for timber production are also dispersed throughout the recommended park. It is therefore appropriate that, under the circumstances prevailing in this area, the Forests Commission should have the responsibility for fire-prevention as well as suppression throughout the park.

The classification of the area as a national park does not restrict the use of any necessary fire-suppression measures. In the event of fire within or adjoining the park, decisions as to the most appropriate course of action required to suppress the fire, and the most appropriate equipment to be used, are the responsibility of the Forests Commission alone. The resources of the National Parks Service would be available to the Commission for fire-suppression operations, to be used under the direction of the Forests Commission. The Country Fire Authority brigades in the vicinity of the Grampians and the employees of the sawmilling industry also provide valuable assistance in fire-suppression operations.

Fire-prevention measures such as maintenance of fire access tracks and protective burning must continue. The particular measures to be taken will be incorporated in fire-protection plans prepared and executed by the Forests Commission. However, research should continue into the best methods of preventing wildfire in the Grampians, particularly with regard to the use of fuel-reduction burning in areas of high conservation value.

Vermin and noxious weeds

Vermin and noxious weeds within the recommended Grampians National Park will be controlled. This will remain the responsibility of the Department of Crown Lands and Survey. Control measures will be taken by both the National Parks Service and the Department, using methods decided upon jointly by the two parties.

Integration of management

In managing the Grampians to provide for the many uses that occur in the area, a high degree of co-operation and co-ordination will be required between the two organizations with the major management responsibilities. For example, recreational use of areas from which timber will be produced will continue, and areas used for timber production and recreation are located within proclaimed catchments supplying water for domestic and stock purposes. In addition, fire-protection plans prepared by the Forests Commission for the whole park will need to take account of the various important uses and values such as water production, recreation, education, conservation, and timber production.

One aspect requiring the closest co-operation between the two managing authorities will be the development of any new roading that may be required for forest-management operations or the development of further recreation opportunities.

It is clear therefore that, although each managing authority has quite specific management responsibilities, a co-ordination committee would ensure that programs are integrated. It is therefore proposed that a Co-ordination Committee be established to perform this function, with membership comprising the Chairman of the Forests Commission, the Director of the National Parks Service, and the Secretary for Lands.

Recommendation

A1 Grampians National Park

That the area of approximately 166 000 ha shown on the map 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
- (d) protect sites of geological, archaeological, and historical significance that
 - (e) the Fisheries and Wildlife Division prepare plans for the conservation of wildlife in consultation with the National Parks Service and the Forests Commission and that, after agreement, these be incorporated into the management plan
 - (f) timber harvesting be permitted in those areas indicated on the map, with a review 15 years after the park's inclusion on the Schedule to the *National Parks Act* 1975, with the exception that, for those areas indicated separately on the map, timber harvesting should be phased out within 10 years of the park's inclusion on the Schedule
 - (g) grazing be permitted only on such areas and at such times as the managing authorities consider necessary for management purposes
 - (h) apiculture be permitted
 - (i) legal access continue to be available to any freehold land enclosed within the park
 - (j) extraction of building stone from the Heatherlie quarry be permitted, but historical relics be protected (the National Parks Service and the Department of Minerals and Energy should consult concerning conditions controlling the extraction)
 - (k) horse-riding be permitted, outside domestic water supply catchments, in areas defined by the National Parks Service
 - (l) dispersed camping continue to be permitted outside domestic water supply catchments
 - (m) the existing road network be substantially maintained (in particular, current road access to popular features should be maintained)
 - (n) gravel extraction, from a limited number of strategically placed locations, be permitted with the approval of the National Parks Service

and that it be included in the Schedule to the *National Parks Act* 1975, with management passing to the National Parks Service when the necessary funds and other resources are available.

Notes:

1. A fire lookout, helipads, airstrip, associated fire-protection installations, and several communications installations are situated within the recommended park; these facilities and a minimal area around them should continue to be managed by the relevant Departments.
2. Logging and silvicultural operations within the timber-production zones should be controlled by the Forests Commission, who should ensure the protection of important scenic, recreational, and conservation values that may be identified within or adjacent to these zones. All of these zones are situated within proclaimed water supply catchments and contain areas of land that are highly susceptible to soil degradation and loss, capable of endangering water supply values. Appropriate prescriptions will be developed and applied in the planning and management of timber-harvesting operations within these zones to ensure that the quality, quantity, and regularity of water supply are adequately protected.
3. The old sandstone quarry north of Mount Stapylton (originally used to supply beaching material for the State Rivers and Water Supply Commission reservoirs, to the north) may continue to be used to supply road-making materials as the need arises.
4. Council is aware that 'stone'—suitable for roadworks—is in short supply in areas to the north of the Grampians and that, periodically, the relevant authorities draw supplies from the Grampians. Sources of stone from outside the park should be thoroughly investigated. If, after these investigations, it can be shown that there is a necessity for 'stone' to be supplied from within the Grampians National Park, extraction may take place subject to the approval of the National Parks Service and the principles and guidelines set out in Chapter R (Mineral and Stone Production).
5. Particular care should be exercised with regard to the prevention of further spread of the root-rot fungus—*Phytophthora cinnamomi*—in any gravel-extraction or roading operations.
6. It is probable that the construction of additional water supply facilities will be necessary within the Grampians. Council cannot make specific provision for such developments until definite proposals are made.

A2 GRAMPIANS STATE FOREST

The Grampians State forest has a variety of uses, including recreation, water production, grazing, and timber production. It also includes areas of significance for nature conservation.

Extensive areas of river red gum woodland around Woohlpooer and gum-box eucalypt woodlands of the western Black Range are licensed for grazing. This is controlled under a system of licences and agistments—to enable grazing intensity to be regulated, to allow the establishment of eucalypt regeneration, and to prevent soil erosion. These woodlands are also grazed extensively by large numbers of macropods.

Of the total area of merchantable-quality durable-species (gum and box) forests in the study area, the most extensive is located in the Woohlpooer-Black Range region. The regrowth river red gum forests at Woohlpooer—now almost 100 years old—yield small-dimension timbers from silvicultural thinnings, but have the potential to produce considerable volumes of timber in the future.

Two softwood plantations included in the Grampians State forest cover gross areas of 400 ha and 700 ha respectively. The smaller, located north of Halls Gap, has a net productive area of 100 ha. Replanting of harvested areas and previously marginal sites—using improved planting stock and establishment techniques—will boost the productivity of this plantation. This, and the other plantation at Billywing, should produce an estimated sustained annual yield of about 7000 m³ over the next 15 years, which will increase substantially after about 20 years. Because of conflicts with other land uses and values, the Council believes that there should be no increase of softwood plantations in the area.

Recommendation

A2 Grampians State Forest

That the area of approximately 33 600 ha shown on the map be used to:

- (a) (i) provide opportunities for open-space recreation and education
- (ii) conserve native plants and animals
- (iii) supply timber, other forest products, and extractive materials
- (b) supply water and protect catchments
- that
- (c) the special features listed below, and other important values that may be identified within the areas of State forest, be protected
(these values and features should be protected by management prescription; where faunal values are of importance, the Fisheries and Wildlife Division should be consulted in the preparation of management plans)
- (d) grazing be permitted in the areas currently used for this purpose
- (e) apiculture be permitted
- (f) the two areas currently used for softwood plantations should continue to be available for this purpose

and that it remain as State forest and present tenure and management continue.

Note:

The Grampians State forest includes both Crown land (reserved and unreserved) and reserved forest—as shown on Map A.

Special features

The woodlands extending west from the Victoria Range to the Black Range and surrounding the Rocklands Reservoir are the largest remnant of what was the predominant vegetation throughout south-western Victoria. These woodlands greatly increase the area and diversity of habitats available for the conservation of fauna, provide habitat for some 100 species of vertebrate animals, and are valuable honey-producing areas.

Occurrences of small milkwort (*Comesperma polygaloides*)—an endangered species with widely disjunct distribution in southern Australia—occur in State forest west of the Henty Highway (and on the road reserve), north of the Billywing turn-off.

B. STATE AND REGIONAL PARKS

STATE PARKS

The parks recommended below include distinctive and important land types not represented elsewhere in the State-wide system of parks.

The south-western Wimmera plains are composed of inland sand dunes, sand sheets, and alluvial deposits of Quaternary origin. Much of this region has been alienated, and public land is now largely restricted to the poorer sand country. The proposed Mount Arapiles-Tooan State park contains examples of the sand dunes and alluvial plains of the region.

In the south of the study area, the two proposed State parks contain recently formed basalt plains and include a variety of volcanic features.

Mount Arapiles-Tooan State Park

This park, consisting of two blocks of public land, includes part of the easternmost ridge of four Pliocene (Parilla sandstone) ridges running from the Little Desert to the Glenelg River. These ridges, overtopped by more recent sands, are regarded as the position of stranded coastlines, developed as the Pliocene sea retreated from the Murray Basin.

Alluvial deposits of sand, silt, and clay comprise the interdune corridors. The original gum, buloke, and box woodlands of these areas have largely been cleared for agriculture and are now restricted to relatively small patches in, or around the perimeter of, public land.

The three blocks of public land that comprise this State park and the recommended Jilpanger Flora and Fauna Reserve (Recommendation H13) form an important vegetative, geomorphic, and geographic link between the open scrub areas of the Little Desert, the Grampians ranges, and the woodlands, scrub, and stringybark forests in the south-west of the State. More than 530 native plant species have been recorded in these blocks.

The easterly block in the park (Mount Arapiles) is an outstanding landscape feature. It is an outlier of the Grampians sandstones, rising abruptly from the flat Wimmera plains, and lookouts on it offer extensive views of the surrounding countryside.

Yellow gum and long-leaf box, with a dense shrubby understorey, grow on the elevated areas, while the outwash slopes support stands of mallee—including peppermint box (*Eucalyptus odorata*)—and woodlands of grey box and yellow gum.

About 430 native plant species have been recorded in the area. They include: the rare skeleton fork fern (*Psilotum nudum*) and the large-leaf ray flower (*Anthocercis frondosa*); unusually large forms of the Bendigo wax-flower and pink heath; the small milkwort (*Comesperma polygaloides*), an endangered species with a widely disjunct distribution in southern Australia; and hairy tails (*Ptilopus erubescens*), an uncommon species that, due to grazing pressures, now has a greatly reduced range in south-eastern Australia.

The Mount is noted as an important habitat of the peregrine falcon. The range of habitats also supports a rich variety of reptilian species—representative of both the Bassian and Eyrean zoogeographic zones.

Mount Arapiles' rugged cliffs are known nationally for the extent and variety of opportunities they offer for rock-climbing. The camping and picnic facilities are heavily used by both tourists and local residents, and the area is very popular for nature study.

The second block of public land (Tooan block) included in the park is one of the few in the south-western Wimmera region containing a wide variety of woodland tree species. Black box, yellow box, yellow gum, river red gum, and buloke grow on the alluvial flats, while the sand dunes support stands of mallee species as well as brown stringybark. Kamarooka mallee (*Eucalyptus froggattii*) and peppermint box have been reported in one of the mallee stands. Rock wattle (*Acacia rupicola*), otherwise known only in sandstone areas, also occurs in the sands of this portion of the park.

Several bird species recorded in this area—the southern scrub-robin, variegated fairy-wren, Gilbert whistler, and white-fronted honeyeater—are at the southern limit of their range in Victoria, and evidence of mallee fowl has been found here.

Along with the other forested areas of the south-western Wimmera plains, the park is part of the habitat of the Victorian sub-species of the red-tailed black cockatoo—an endangered species that now only occurs in this part of Victoria.

Recommendation

B1 That the area of approximately 4430 ha shown on the map 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
- that
- (c) apiculture be permitted
 - (d) grazing be phased out within 10 years following the adoption of these recommendations
 - (e) 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 peregrine falcon)
 - (f) adequate access should continue to be provided throughout the area
- and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the National Parks Service.

Notes:

1. The Council will consider adding Mitre Rock—north of Mount Arapiles—to the park when making recommendations for the Wimmera Study Area.
2. The fire lookout and communications installation on Mount Arapiles—and a minimal area around them—should continue to be managed by the relevant departments and access to them permitted. It is possible that some expansion of the communications facilities may be required in order to improve the television reception in the region. Council cannot make specific provision for this work until a definite proposal is made.

3. Council recognizes that Mount Arapiles is an important recreational venue for large numbers of people. The area is also of great importance for the conservation of flora and fauna. The management authority should continue to provide for recreational activities such as rock-climbing, vehicular access to camping and picnic sites and to viewing points, and facilities for the large numbers of campers that use the area.

4. The golf course south of Mount Arapiles is excluded from the park (see Recommendation O4).

Black Range State Park

The Black Range is an important scenic feature, being a western outlier of the Grampians ranges.

The rugged ridgeline repeats, in miniature, the rock formations of the Grampians and includes five known Aboriginal rock-painting sites—including one that was in use more than 3300 years ago.

Not as heavily visited as the Grampians, this area offers the opportunity for relatively undisturbed bushwalking and nature study in a variety of forest types—including the rocks and shrublands of the Range, dry sclerophyll forests of the outwash slopes, and yellow gum—yellow box woodlands along the watercourses.

A number of interesting and uncommon plant species are found in the area, including: *Anthocercis frondosa* (large-leaf ray-flower), which is also found on Mount Arapiles, but has a disjunct occurrence on the Wentworth River in Gippsland; *Pultenaea d'altonii* (bush pea), which occurs in few other locations in the State—the nearest being in the Little Desert; and *Pultenaea patellifolia* (Mount Byron bush pea) found only here and on Mount Arapiles.

A Lower Devonian (Grampians) sandstone ridge, and associated colluvium, forms the bulk of the rock strata of this park. However, the major watercourse in the park—Mouchong Creek—has exposed an outcrop of Cambrian rock (predominantly greenstones). Such outcrops have limited occurrence in the study area.

Recommendation

B2 That the area of approximately 11 700 ha shown on the map 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
- (d) protect sites of geological, archaeological, and historical significance that
- (e) apiculture be permitted
- (f) grazing be permitted only on such areas and at such times as the managing authority considers necessary for management purposes
- (g) 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

(h) adequate access should continue to be provided throughout the area

and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the Forests Commission.

Notes:

1. Mineral search licence No. 1627, covering approximately 40 ha, is not included in the park.
2. The outcrop of Cambrian greenstones included in the park has potential, as yet not fully prospected, for base-metal mineralization.

Mount Napier State Park

The intact volcanic cone of Mount Napier rises more than 180 m above the surrounding plains, forming a distinctive topographic feature visible from Hamilton. Many such volcanoes elsewhere in the State are being, or have been, quarried for road-making materials. The proposed State park comprises the contiguous block of public land that includes Mount Napier and the plain of broken and fractured lava (known locally as 'stony rises') extending west towards Byaduk.

Mount Napier State park and the Mount Eccles State park (Recommendation B4) contain the most extensive and diverse collection of volcanic features in south-eastern Australia. In the case of the Mount Napier State park, these include a number of eruption points, scoria cones, the recent lava plain, and lava barriers and caves (described below).

The last main flow of lava from Mount Napier occurred about 7000 years ago, making the Harmans Valley flow, running south-west from the Mount, the youngest in south-eastern Australia. Differential cooling of the lava has produced barriers (ridges lying across the direction of flow) and caves—formed as the lava continued to flow out from under a solidifying surface, leaving elongated cavities. The 'Great Barrier' and the Byaduk Caves, located towards the western extremity of this park, are outstanding examples of these features. The Byaduk Caves are the largest set of lava caves in Australia.

The relative youth of the eruptions has ensured the preservation of the many fine examples of volcanic features to the present time.

A woodland of manna gum and blackwood provides the major tree cover throughout the park. This vegetation type—on stony rises—has a very limited occurrence on public land elsewhere in Victoria (its other main occurrence is in the Mount Eccles State park). The ground flora has unusual, although not especially diverse, structure and composition; however, the three-part crassula (*Crassula triparta*), a rare plant apparently endemic to Victoria, has been reported here. The flora of the Byaduk Caves is botanically outstanding, and includes more than 60 species of moss and some 20 species of fern—including the rare willow spleenwort (*Asplenium falcatum*).

Repeated firing of the area has almost completely denuded Mount Napier of tree cover, and large areas have been colonized by bracken. Manna gum and blackwood regeneration on many of the open areas, however, indicates that, with protection, the area can be revegetated successfully.

Some illegal and indiscriminate firing of the area has occurred in the past. Council recognizes that areas such as these may pose special problems of fire protection, and that such measures as protective burning need to be undertaken. Part I of the General Recommendations outlines the responsibilities for fire protection on public land.

In addition to the distinctive stony rises fauna in this park, colonies of bent-wing bats inhabit the Byaduk Caves.

Recommendation

B3 That the area of approximately 2500 ha shown on the map 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) protect areas of geological, archaeological, and historical significance
- that
- (d) grazing be phased out within 10 years following the adoption of these recommendations
- (e) 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
- (f) adequate access should continue to be provided throughout the area

and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and managed by the National Parks Service.

Mount Eccles State Park

This park includes Mount Eccles (a partially quarried scoria cone) and the stony rises country extending west to Lake Condah. It contains a number of geological features, such as the lines of vents with shafts, lava canals, and the unusual maar flooded by Lake Surprise at Mount Eccles, not found elsewhere in south-eastern Australia. In fact, as stated above, the Mount Eccles and Mount Napier State parks together contain the most extensive and diverse collection of volcanic features in south-eastern Australia.

At the western edge of the Mount Eccles lava flow—at Lake Condah—is an example of a lava blister or tumuli (mounds produced by localized pressure under the surface of the lava—forcing up the solidifying skin without breaking it).

Adjacent to Lake Condah are a number of Aboriginal fish traps and channels constructed from the local basalt rocks. The traps were situated at various levels to utilize the fluctuating level of the lake, and a series of banks were constructed to channel fish to where they could be caught more readily. Clustered around the traps are the remnants of a hundred or so semi-circular structures, also constructed from the local stone. These structures were probably roofed with bushes and served as dwellings for the Aborigines. This evidence of Aboriginal occupation and modification of his environment are important historical relics, and are a major conservation feature incorporated in the park.

As with the Mount Napier State park, the major tree cover throughout the area is a woodland of manna gum. A small stand of messmate stringybark, however, is growing on the recent lava plains near the southern limit of the stony rises in the park.

Stone fences occur frequently throughout the stony rises, indicating the extent to which the manna gum woodlands were grazed before bracken over-ran the grassed areas. This colonization by bracken is largely a result of the modification of the original vegetation by repeated fires throughout the area.

The extremely jumbled and confused volcanic landscape of the park provides a variety of habitats and micro-environments that, to date, have been little studied. However, a distinctive mammalian fauna is known to inhabit the woodlands of the stony rises, including the stony-rises form of the dusky antechinus, bush rat, eastern swamp rat, and short-nosed bandicoot. Many reptiles also utilize the stony habitats.

The park is highly significant for the protection of the habitat of the tiger quoll (tiger cat), the yellow-bellied glider, and the koala.

Recommendation

B4 That the area of approximately 5800 ha shown on the map 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) protect areas of geological, archaeological, and historical significance that
- (d) grazing be phased out within 10 years following the adoption of these recommendations
- (e) 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 conservation of the habitat of the tiger quoll)
- (f) adequate access should continue to be provided throughout the area

and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and managed by the National Parks Service.

REGIONAL PARK

The Grampians are by far the most important recreational venue in the vicinity of the major urban centres of the study area.

Within a short distance of each of the major centres, however, smaller areas of public land also have value for informal outdoor recreation.

Mount Arapiles-Tooon State Park and Green Lake, in the vicinity of Horsham, for instance, provide for the recreational interests of large numbers of people. Similarly, in the vicinity of Stawell, Lakes Fyans and Lonsdale are heavily utilized for outdoor recreation.

The regional park recommended below provides for informal outdoor recreation close to the city of Ararat.

Ararat Hills Regional Park

The long north-west-trending ridge of the Ararat Hills, rising to 240 m above the surrounding country, dominates the landscape of Ararat. The regional park incorporates almost all of the public land located in the Hills—between the Western Highway and Cathcart, and includes the area set aside in 1936 as the McDonald Park Wildflower Reserve—which should continue to be clearly identified within the Regional Park.

Because of the extensive network of tracks, the popular Pioneer Memorial Lookout, a number of picnic areas, and the close proximity to the city of Ararat, the area is heavily used for a variety of recreational pursuits.

Red stringybark and long-leaf box are the predominant tree species throughout the hilly areas, with yellow gum and yellow box occupying the flats. Very old, large messmate stringybark trees along the top of One Tree Hill are of particular botanical interest; and the area—with more than 200 native plant species, including 34 species of orchids, as well as a number of non-local native plants—is of considerable interest to naturalists.

Numerous shallow mine shafts, a mining dam, and water-races in the park are relics of the gold-mining history of the region.

Recommendation

B5 That the area of 1000 ha shown on the map be used to:

- (a) provide opportunities for informal recreation for large numbers of people
- (b) conserve and protect ecosystems to the extent that is consistent with (a) above
- (c) protect sites of historical significance to the extent that it is consistent with the public safety requirements of the Department of Minerals and Energy that
- (d) use of the area be such as to ensure the safety of visitors (in matters of public safety nothing in these recommendations affect the powers of Inspectors under the *Mines Act* 1958 and the *Extractive Industries Act* 1966; it is understood that in exercising these powers the managing authority would be consulted)
- (e) apiculture be permitted
- (f) fossicking, prospecting, and mineral exploration be permitted in accordance with the recommendations in Chapter R (Mineral and Stone Production)
- (g) the production of limited quantities of timber be permitted consistent with (a) and (b) above
- (h) adequate access should continue to be provided throughout the area

and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act*, 1978 and managed by the Forests Commission.

Notes:

1. A communications installation is located on top of the ridge near One Tree Hill; this installation and a minimal area around it should continue to be managed by the relevant department.

2. The Council is aware that the City of Ararat is investigating means whereby the water supply system for Ararat may be expanded. Such work would include the construction of a reservoir on Picnic Road, within the regional park. The Council cannot, however, make specific provision for this scheme until a definite proposal is made.

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 nutrient cycling. 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.

Alienation of land in the past, the long history of timber utilization and agricultural and other uses throughout the study area, and the well-developed access have combined to limit the choice of reference areas that are undisturbed and can be adequately buffered.

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-C7 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 advisory committee and the managing authorities of the area itself and of the land adjacent to the area and that
- (c) activities—such as grazing, exploration for minerals and gold, mining, logging, and beekeeping—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.

Note:

Reference areas constitute the only public land from which apiary sites are excluded. Council believes that alternative provisions can and should be made for those beekeepers affected by these recommendations.

C1 Tooan (430 ha)

Quaternary sediments, flat alluvial deposits with some areas of gilgai and low dunes of aeolian sands; elevation 180 m; approximate annual rainfall 475 mm; woodlands of black box, yellow gum, river red gum, and buloke, low forests of brown stringybark on the dunes.

To be managed by the National Parks Service.

C2 Jilpanger (700 ha)

Quaternary sediments, sand dunes, degenerating eastwards to sand sheets and alluvial deposits, a small ridge of exposed Pliocene (Parilla) sandstone; elevation 160–180 m; approximate annual rainfall 525 mm; shrubby woodlands of brown stringybark, heath, and woodlands of yellow gum.

To be managed by the National Parks Service.

C3 Moora Valley (510 ha)

Quaternary sediments, flat; elevation 220 m; approximate annual rainfall 700 mm; heath, open forest I of scent-bark and yellow box, and woodland of river red gum and yellow box.

To be managed by the National Parks Service.

C4 Bear (380 ha)

Laterite on Rocklands rhyolite, slightly dissected tableland; elevation 220–240 m; approximate annual rainfall 650 mm; open forest I to woodland of scent-bark, yellow gum, and yellow box.

To be managed by the Forests Commission.

C5 The Sisters (280 ha)

Lower Devonian granite, hilly; elevation 260–520 m; approximate annual rainfall 700 mm; shrubby woodland of brown stringybark, open forest I of brown stringybark and messmate, and open scrub of long-leaf box and brown stringybark; small areas of heath, river red gum, and yellow box woodland and manna gum, swamp gum, and tea-tree swamps on Quaternary sediments.

To be managed by the National Parks Service.

C6 Grasstree Creek (675 ha)

Silurian to Lower Devonian sandstones, dip slope with an eastern escarpment; elevation 520–960 m; approximate annual rainfall 900 mm; open forest II of messmate stringybark and brown stringybark, open forest I of brown stringybark, open scrub of Grampians gum, and low open shrubland of Grampians gum and snow gum.

To be managed by the National Parks Service.

C7 The Stones (400 ha)

Recent basalt, stony rises; elevation 50–75 m; approximate annual rainfall 750 mm; manna gum woodland.

To be managed by the National Parks Service.

D. 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 study area, animal habitats range from the coastal environments and the stony rises to the forests and wetlands of the south-western Wimmera plains, and include the diverse habitats found in the Grampians.

The vegetation map of the study 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 authorities 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 brush-tailed rock wallaby found among rocky outcrops in the dry open forest of the Victoria Range (in the Grampians) is one such animal.

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. 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.

The many wetlands of the study area, especially those of the south-western Wimmera, provide specialized habitat for a large group of birds, fish and crustaceans, and some mammals. They are also important elements of the scenery of the region and several are used for domestic or agricultural water supplies, or are harvested for salt when dry.

Although some forms of land use do not have marked detrimental effects on habitat, it is necessary to set some areas aside specifically for conserving fish and wildlife, and for developing wildlife conservation techniques.

These areas may be selected for conservation of species that the community harvests or directly utilizes. They may contain the habitat of endangered species or they may have specialized breeding grounds or a high species diversity, or be of educational or scientific interest. They may also be selected because of their ecological significance for (or regional representation of) a species or faunal association, or for their value as a stop-over for migratory or nomadic species.

Many of the public land lakes and swamps have been cleared—at least partially—of trees, and the majority are grazed. Grazing may need to be excluded from some of these areas for a period to permit regeneration of the native tree species.

In all wildlife reserves the responsibility for the suppression of fires remains with the Forests Commission. Fire-prevention measures will be carried out where necessary.

Vermin and noxious weeds within wildlife reserves will be controlled and will remain the responsibility of the Department of Crown Lands and Survey.

Recommendations

D1-D74 That the areas indicated on the map and described below be used:

- (a) primarily to conserve the habitat of native animals, particularly water birds and
 - (b) for public recreation and education where this does not conflict with the primary aim
- that
- (c) grazing and utilization of water be permitted at the discretion of the managing authority

and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and managed by the Fisheries and Wildlife Division.

Notes:

1. Grazing may be excluded from some areas for a period to permit the regeneration of tree species.
2. Harvesting of salt and other minerals may be permitted at the discretion of the management authority.

D1 Mullinger Swamp (25 ha)

Fresh-water lake and frontages adjoining allotment 47, Parish of Benayeo.

Note:

Mullinger Swamp lies on the South Australia-Victoria border. The portion of the swamp in South Australia, which covers some 13 ha, has been declared a Conservation Park by the South Australian Government and is managed by the

South Australian National Parks and Wildlife Service. Hunting is prohibited on and around that portion of the lake within South Australia; in order to complement the management objectives of the Conservation Park, hunting should not be permitted in this Wildlife Reserve.

The Fisheries and Wildlife Division should consult with the South Australian National Parks and Wildlife Service to ensure that the Victorian section is managed in sympathy with that portion in South Australia.

- D2 Lake Jaie Jaie (39 ha)**
Shallow fresh-water marsh and the adjacent reserve (allotment 33A), section A, Parish of Boikerbert.
- D3 Leah Swamp (216 ha)**
Deep fresh-water marsh and surrounds south and east of allotment 6, Parish of Boikerbert.
- D4 Swamp (40 ha)**
Shallow fresh-water marsh adjacent to allotment 36B, Parish of Wytwarrone.
- D5 Lignum Swamp (87 ha)**
Shallow fresh-water marsh and surrounds, allotment 16, Parish of Murrundarra.
- D6 Swamp (13 ha)**
Fresh-water marsh and frontages south of allotment 63A, Parish of Bringalbart.
- D7 Swamp (8 ha)**
Fresh-water marsh, allotment 54, Parish of Boorooopki.
- D8 Bens Swamp (58 ha)**
Fresh-water marsh, allotment 69, Parish of Boorooopki.
- D9 Fisheries and Wildlife Division research station (30 ha)**
Cod hatchery and adjacent marsh, east of Lake Charlegrark.
- D10 Boiler Swamp (7 ha)**
Fresh-water marsh and surrounds on northern boundary of allotment 77, Parish of Boorooopki.
- D11 Winter Lake (120 ha)**
Shallow fresh-water marsh and frontages surrounded by allotments 42, 41, 94, 21, and 51, Parish of Jallakin.
- D12 Brig Brig Swamp (21 ha)**
Deep fresh-water marsh adjacent to allotments 57A, 57, 11, and 15 on the eastern boundary of the Parish of Jallakin.
- D13 School Swamp (27 ha)**
Shallow fresh-water marsh and frontages adjoining the north-western boundary of allotment 4, Parish of Jallakin, and including the School Reserve of 1 ha adjacent to the swamp.

- D14 McCosslen Swamp (87 ha)**
Fresh-water lake and frontages east of allotment 2, Parish of Jallakin.
- D15 Lake Yampitcha (69 ha)**
Fresh-water lake and frontages mainly bordered by allotment 3, Parish of Edenhope.
- D16 Sheepwash (20 ha) (Gool Swamp)**
Fresh-water lake and access from Edenhope–Mortat Road, north of allotment 12B1, Parish of Edenhope.
- D17 Lake (13 ha)**
Deep fresh-water marsh adjacent to the south-western corner of allotment 11, Parish of Edenhope.
- D18 Hurleys Bank (21 ha)**
Deep fresh-water marsh surrounded by allotments 24, 50, and 47, Parish of Edenhope.
- D19 Lake (20 ha)**
Brackish lake, allotment 56, Parish of Edenhope.
- D20 Lake Kemi Kemi (93 ha)**
Salt-water lake and surrounds south of allotment 57, Parish of Edenhope, and extending into the Parish of Durong.
- D21 Kurrayah Swamp (37 ha)**
Deep fresh-water marsh east of allotments 9 and 9A, section B, Parish of Durong.
- D22 Champion Swamp (13 ha)**
Brackish swamp, almost entirely within allotment 63, Parish of Awonga.
- D23 Broughtons Swamp (25 ha)**
Fresh-water lake and surrounds south of allotment 29B, Parish of Awonga.
- D24 Swamp (12 ha)**
Fresh-water marsh on the northern boundary of allotment 36, Parish of Awonga.
- D25 Alakilu Swamp (72 ha)**
Shallow fresh-water marsh and surrounds west of allotments 30, 34, 34A, and 35, Parish of Awonga.
- D26 Lake Cogumbul (74 ha)**
Shallow fresh-water marsh and surrounds west of allotment 45, Parish of Awonga.
- D27 Swamp (79 ha)**
Shallow fresh-water marsh and surrounds west of allotment 28, Parish of Charam.
- D28 Swamp (80 ha)**
Fresh-water marsh, allotment 40, Parish of Goroke.

D29 Lake Koynock (60 ha)

Shallow fresh-water marsh and surrounds west of allotment 7, Parish of Karnak.

D30 Lake Karnak (163 ha)

Deep fresh-water marsh and surrounds north of the Township of Karnak, Parish of Karnak.

D31 Charam (160 ha)

Deep fresh-water marsh and adjoining river red gum woodland, allotments 22, 22A and 22B, Parish of Charam.

Note:

Limited quantities of durable-species timber may be available from this area in the future; management should be in consultation with the Forests Commission.

D32 Mahney Swamp (27 ha)

Shallow fresh-water marsh and surrounds, allotment 37A, Parish of Charam.

D33 Little Donkey Woman (12 ha)

Deep fresh-water marsh and surrounds, allotment 44, Parish of Charam.

D34 Swamp (43 ha)

Low open scrub and fresh-water lake, being allotment 15B, Parish of Charam.

D35 O'Keefe Swamp (72 ha)

Deep fresh-water marsh and surrounds east of allotment 47, Parish of Charam.

D36 Pot Brook (62 ha)

Fresh-water lake and surrounds south of allotment 2, section C, Parish of Yallakar.

D37 Lake Mullancoree (50 ha)

Salt-water lake and surrounds east of allotments 40F, 90, and 37, Parish of Wombelano.

D38 Lake Dewabbin (25 ha)

Fresh-water lake and surrounds to the north-east of allotment 2, Parish of Harrow.

D39 Swamp (17 ha)

Fresh-water marsh adjacent to allotment 31, Parish of Gymbowen.

D40 Swamp (23 ha)

Portion of a shallow fresh-water marsh and surrounds adjacent to the western corner of allotment 34, Parish of Kalingur.

D41 Swamp (34 ha)

Shallow fresh-water marsh and surrounds, allotment 35, Parish of Kalingur.

- D42 Lake (100 ha)**
Salt-water lake and surrounds within allotment 115, Parish of Arapiles.
- D43 Lakes (24 ha)**
Two shallow fresh-water marshes and surrounds adjacent to the south-eastern boundary of allotment 115A, Parish of Arapiles.
- D44 Lake (38 ha)**
Salt-water lake and surrounds south of allotment 29, Parish of Arapiles.
- D45 Chain of lakes (61 ha) (including portion of Jaka Lake)**
Chain of salt-water lakes and their surrounds or portions thereof, stretching southwards from the southern boundary of allotment 20, Parish of Arapiles, to the western boundaries of allotments 29A and 29B, Parish of Tooan.
- D46 Heard Lake and the salt lake to the south (135 ha)**
Salt-water lakes and their surrounds west of allotments 1 and 35A, Parish of Tooan.
- Note:
The vegetation around these two lakes, being in a near-natural condition, could serve as a reference when managers are regenerating the surrounds of other swamps.
- D47 Boundary Swamp (125 ha)**
Shallow fresh-water marsh and surrounds, allotment 18, Parish of Lowan.
- D48 Lake Clarke (105 ha)**
Salt-water lake and surrounds, allotment 15, Parish of Lowan.
- D49 Lake Carchap (89 ha)**
Brackish lake and surrounds, allotment 10, Parish of Lowan, extending into the Parish of Carchap, where the lake is bounded by allotments 136 and 136A.
- D50 Bow Lake (182 ha)**
Brackish lake and surrounds east of allotments 18 and 19A, Parish of Jilpanger.
- D51 Lake Coyrahilla (160 ha) (Lake Copper Colour)**
Salt-water lake and surrounds east of allotments 46C and 112, Parish of Toolongbrook.
- D52 Greens Swamp (7 ha)**
Deep fresh-water marsh east of allotment 45A, Parish of Toolongbrook.
- D53 North Lake, Centre Lake, and other salt-water lakes and wetlands in the area of Douglas township, Parish of Toolongbrook (550 ha approx.)**
North Lake: west of allotment 25.
Centre Lake: east of allotment 29.
Three small lakes, or portions thereof, adjacent to allotments 52 and 85A; the salt-water wetland west of allotment 34A; two salt-water wetlands east of allotment 50A; and the salt lake north of allotment 37.

- D54 White Lake (607 ha)**
Salt-water lake in the south-east of the Parish of Toolongrook.
- D55 Swamp (19 ha)**
Brackish swamp surrounded by allotments 12A, 15A, and 13A in the south-eastern corner of the Parish of Toolongrook.
- D56 McGlashin Swamp (34 ha)**
Brackish swamp and surrounds, allotment 9 in the south-eastern corner of the Parish of Toolongrook.
- D57 Lake (45 ha)**
Salt-water lake and surrounds adjacent to allotments 16A, 9, and 11, Parish of Kout Narin.
- D58 Lake Kanagulk (430 ha)**
Deep fresh-water marsh and surrounds in the north-central portion of the Parish of Telangatuk.
- D59 Cooks Reserve (25 ha) (Nurrabiel Swamp)**
Shallow fresh-water marsh north of allotment 23, Parish of Nurrabiel.
- D60 Darragan Swamp (54 ha)**
Fresh-water marsh east of allotment 32, Parish of Nurrabiel.
- D61 Kingcourt Swamp (24 ha)**
Shallow fresh-water marsh south of allotment 18, Parish of Wonwondah.
- D62 Donald (Dollin) Swamp (68 ha)**
Shallow fresh-water marsh east of allotment 1, Parish of Dollin.
- D63 Jallumba Swamp (100 ha) (Red Gum Swamp)**
Fresh-water lake, allotment 94, Parish of Carchap.
- D64 Swamp (38 ha)**
Deep fresh-water marsh on allotment 40A, Parish on Connangorach.
- D65 Connangorach Swamp (198 ha)**
Shallow fresh-water marsh and surrounds in the north-central portion of the Parish of Connangorach.
- D66 Wash Tomorrow (Washdamorra) Swamp (85 ha)**
Fresh-water marsh and surrounds east of the Toolondo Reservoir.
- D67 Black Swamp (130 ha)**
Fresh-water marsh west of allotment 18, Parish of Balmoral.

D68 Victoria Lagoon (55 ha)

Catchment-fed shallow fresh-water marsh, being the Water Supply Reserve in the south of the Parish of Woohlpooer.

D69 Bryan Swamp (737 ha)

Shallow fresh-water marsh in the Parish of Panyyabyr (already designated a State Game Reserve and managed by the Fisheries and Wildlife Division), and the Timber Reserve east of allotments 84A and 84B, Parish of Mokanger and east of allotments 70A and 70B, Parish of Panyyabyr.

D70 Lake Muirhead (330 ha)

Brackish lake, allotment 7, Parish of Parrie Yalloak and the unnumbered allotment to the north in the Parish of Watgania.

D71 Mount William Swamp (630 ha) (The Big Swamp)

Shallow fresh-water marsh in the east of the Parish of Watgania and including allotment 52A3 in the Parish of Kiora.

D72 Lake Buninjon (230 ha)

Brackish lake and portion of its hinterland, south-west of allotment 47, Parish of Kiora.

D73 Swamp (12 ha)

Salt-water swamp, allotment 1D, Parish of Bunnugal.

D74 The Green Swamp (81 ha)

Shallow fresh-water marsh west of allotments, 3B1, 3B2, and 3B3, Parish of Bunnugal.

Note.

There are specific recommendations and references to wildlife values in other chapters, such as Hardwood Timber Production, Water Production, and Parks.

E. WATER PRODUCTION

Most of the surface water resources of the Grampians are harvested, and there are few ways in which the existing water-collection facilities can be extended. Water is supplied through an extensive system of dams, channels, pipelines, and storages into several domestic water supply systems which supply population centres to the south and east of the Grampians, and into the vast Wimmera-Mallee Domestic and Stock Water Supply System, which is operated by the State Rivers and Water Supply Commission. Outside the Grampians, surface water used by Great Western and by the Coleraine-Casterton Waterworks Trust is drawn from catchments consisting of freehold land.

Horsham and Balmoral rely on water from the Wimmera-Mallee system. The Stawell and Ararat Water Trusts draw their primary supplies from public land catchments, but maintain pipelines from Lake Fyans (part of the Wimmera-Mallee system) for supplementary supplies and, in the future, may use groundwater to further supplement supplies. Other towns along the eastern and southern margins of the Grampians utilize groundwater to supplement surface supplies, and in some cases this is the only supply during periods of drought. Pomonal, east of the Grampians, and towns in the south-western Wimmera plains (except Edenhope, which draws water from Lake Wallace) rely on groundwater.

Current management and use

No catchment in the study area is used solely for water production, although restrictions limit the type of activity permitted on some of the reservoirs and in some of the catchments.

The catchments are subject to a variety of land uses, including recreational activities, timber production, and agriculture on open farmlands. The water supply for the City of Horsham, for instance, originates in the Wartook Reservoir, which has a forested catchment—used for timber production—in the Grampians. This water flows down the McKenzie River, through popular recreation and camping areas at Smith Mill, the McKenzie River waterfalls, and Zumsteins, and is then diverted into an open channel, which passes through farmland to the Mount Zero Reservoir.

Land use planning

The Council notes that the degree of land use planning varies between catchments. A land use determination exists for part of the catchment of the Rocklands Reservoir, although the whole of this catchment has been proclaimed. The catchment for the Wimmera-Mallee Domestic and Stock Water Supply System has been proclaimed; and a municipal Interim Development Order restricts agricultural activity in the catchment for the Great Western water supply.

Council maintains that the Soil Conservation Authority should investigate all domestic water supply catchments within the study area and, where appropriate, these will be recommended for proclamation by the Land Conservation Council, in order to ensure a uniform procedure for land use planning within these areas.

A. Catchment land

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, Council believes that, in many areas,

catchments can be managed for a range of uses consistent with the provision of adequate protection of the water resources. 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, distribution, or quality of water yield in one instance may have a profound effect in another. Changes in land use, which could detrimentally affect the quality, quantity, or distribution of water supplied from a catchment, should only be made following full consideration of the benefits and disadvantages associated with the various land use options. These considerations should take account of the interests of the groups likely to be affected by any changes as well as broader regional and State-wide issues.

Where there is a multiplicity of uses in 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*.

After proclamation, and following consultation with the Land Conservation Council, the Soil Conservation Authority may make a land use determination for a catchment. This specifies the most suitable uses of all land in the catchment, and includes delineation of protective strips around storages and along major watercourses.

Council believes that in most situations it is not necessary for a water supply authority to control and manage all the public land in its water catchment. Public authorities managing land within a proclaimed catchment should be conscious of the implications of management decisions on water production and should 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.

B. Buffer zone

The water supply authority should control and manage a buffer zone (defined in the land use determination) around storages and diversion works. This buffer zone is separate from the protective strips along watercourses, which, although important for water supply protection, would not by themselves form a manageable unit.

In addition the water supply authority should control and manage the storages and the areas on which capital works are situated, together with any other areas that may be needed for efficient management.

Each catchment and water supply system has individual characteristics and the determination of the buffer zone will need to take account of these differences. In determining the extent of the buffer zone, consideration should be given to factors such as ground slope, soil type, vegetative cover, adjoining land use, type of facilities available for treating the water, end-use of water, detention time in the storage, and the need to control public use of the storage and its immediate surrounds. The buffer zone should be large enough to reduce entry of most pollutants into the storage by way of filtration of overland flow, absorption through the soil, and assimilation in watercourses. The desirability of the buffer zone being a practical management unit should also be taken into account.

In some instances it may not be practical for the water supply authority to manage all, or part, of the buffer zone. 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 zone with the adjacent land management authority on the basis that it would be managed with the prime object of protecting the water quality.

In those proclaimed catchments where land use determinations have been made prior to the publishing of recommendations, it may be necessary to review the buffer zones in accordance with the principles for defining buffer zones outlined above.

Water quality, yield, and regulation

It is possible to improve the quality of water by partial or complete 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. In many catchments it is already difficult to maintain existing water quality. This problem is likely to become even greater as pressures to allow various forms of land development and use of natural resources increases. Even with properly planned and controlled land use in catchments it is probable that many water supply authorities will consider it necessary to at least disinfect water supplied from their storages. Indeed, many authorities already employ such treatment. Council recognizes that a number of water supply systems need some form of treatment now and that others will need to consider some form of treatment in the future. In order to provide for this requirement Council believes it is important for the government to establish long-term policies that provide for the progressive installation of facilities required to supply water of a satisfactory quality.

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. 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 additional information that can be used in formulating management guidelines.

Additional water needs

Future water needs for domestic, stock, and irrigation purposes, and for the production of electricity, 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. In most cases, an environmental effects statement is now required as part of the planning of any new major storage.

The City of Ararat is currently investigating the feasibility of constructing a reservoir in the Ararat Hills Regional Park (Recommendation B5), while further streams along the Victoria Range—in the Grampians—and possible groundwater sources are being investigated by the Hamilton Waterworks Trust. The Shire of Kowree is also investigating the possibility of expanding the catchment for Lake Wallace.

Recommendations

E1-E21 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, or for which a determination has been made for part of the catchment only), and except where otherwise stated, 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:

- (i) the storage areas
 - (ii) diversion works
 - (iii) associated facilities
 - (iv) the buffer zones around diversion works and storages, as defined in the land use determination
 - (v) any other allotments considered necessary for management
- be used for
- (a) water supply purposes
 - (b) 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 4 of the *Crown Lands (Reserves) Act 1978* for water supply purposes, and be managed by the water supply authority named.

Notes:

1. The primary object of management of the buffer zone must be to protect water quality. Subject to this principle, the water supply authority may permit other secondary uses on the buffer zone. In such cases the principles of management must be agreed upon by that authority and any other authorities concerned.
2. In some instances it may not be practical for the water authority to manage all or part of the buffer zone. 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 zone with the adjacent land management authority on the basis that it would be managed with the prime object of protecting the water quality.
3. The Council considers that fossicking and prospecting under a Miner's Right should not be permitted on land under the control of water supply authorities, or around storages and facilities, etc.
4. Some of the storages have significant values for fish and wildlife conservation, as well as recreation. Therefore, the water supply authority and the Fisheries and Wildlife Division should consult when works are planned for these areas.
5. When preparing or reviewing management plans for areas under their control, management authorities should consult with the appropriate water supply authorities and the Soil Conservation Authority to ensure that due consideration is given to the protection of the water resources of the region.

- E1 Lake Wallace and the wetland (of approximately 25 ha) in the south-eastern portion of the Township of Edenhope; Shire of Kowree.**
This is an important nesting area of the great crested grebe.
- E2 Rocklands Reservoir; State Rivers and Water Supply Commission.**
A land use determination, made in 1959, covers a part of the catchment of this reservoir.
- E3 Mackenzie River diversion; State Rivers and Water Supply Commission.**
- E4 Wartook Reservoir; State Rivers and Water Supply Commission.**
- E5 Lake Lonsdale, excluding the area south of allotment 32A, Parish of Bellaura; State Rivers and Water Supply Commission.**
Important conservation aspects of this reservoir, such as the habitat of the large numbers of waterfowl that breed in the area, and the uncommon narrow-leaf nardoo (*Marsilea angustifolia*), should be protected.
- E6 Glenorchy weir, pumping station and storage; Shire of Stawell.**
- E7 Lake Fyans; State Rivers and Water Supply Commission.**
Both Stawell and Ararat draw supplementary domestic water supplies from Lake Fyans. Ararat's dependence on this source is substantial and increasing; and, in the future, conflict may develop between water-production requirements and the high recreational use of this storage. There should be no expansion of or increase to the existing camping and picnic facilities located on land adjacent to the storage.
- E8 Panrock Creek Reservoir; Shire of Stawell.**
- E9 Dairy Creek diversion; Shire of Stawell.**
- E10 Lake Bellfield, excluding those portions of allotments 14 and 15, Parish of Willam, west of the Grampians Road; State Rivers and Water Supply Commission.**
- E11 Moora Moora Reservoir; State Rivers and Water Supply Commission.**
- E12 Stawell Weir; Stawell Town Council.**
- E13 1st and 2nd Wannon River diversions (3 separate diversions, the third located on a tributary to the 2nd Wannon); State Rivers and Water Supply Commission.**
- E14 Willaura Reservoir; Shire of Ararat.**
- E15 Mason Creek Weir; Shire of Ararat.**
- E16 Four separate diversions; Hamilton Waterworks Trust.**
- E17 Gap Creek diversion; Hamilton Waterworks Trust.**
- E18 Waterworks Creek diversion; Hamilton Waterworks Trust.**
- E19 Brown Creek diversion; Hamilton Waterworks Trust.**

E20 Waterfall Gully diversion; Shire of Mount Rouse.

E21 Konong Wootong Reservoir; Coleraine–Casterton Waterworks Trust.

E22–E46 That in the case of the off-river storages and water supply installations, shown on the map and listed below, or channels (not individually listed), these and their associated reserves remain under existing tenure and control. In these cases no land use determination is necessary.

Notes:

1. Some of the storages have significant values for fish and wildlife conservation as well as recreation. Therefore, the water supply authority and the Fisheries and Wildlife Division should consult when works are planned for these areas.

2. The Council considers that fossicking and prospecting under a Miner's Right should not be permitted on land reserved for water supply purposes, around storages and facilities, etc., or adjacent to water distribution channels.

E22 Groundwater bores (Goroke); Shire of Kowree.

E23 Natimuk storage; State Rivers and Water Supply Commission.

E24 Vectis East irrigation storage; State Rivers and Water Supply Commission.

E25 Low-level storage; Horsham Waterworks Trust.

E26 Dock Lake; State Rivers and Water Supply Commission.

E27 Green Lake; State Rivers and Water Supply Commission.

E28 Pine Lake; State Rivers and Water Supply Commission.

E29 Taylor Lake; State Rivers and Water Supply Commission.

E30 Mount Zero Reservoir; Horsham Waterworks Trust.

E31 Groundwater bores (Apsley); Shire of Kowree.

E32 Groundwater bore (Harrow); Shire of Kowree.

E33 Toolondo Reservoir; State Rivers and Water Supply Commission.

E34 Service basins; Balmoral Waterworks Trust.

E35 Halls Gap Reservoir; Shire of Stawell.

E36 Pipeline headworks; Stawell Town Council.

E37 Pomonal groundwater bores and storage; Shire of Ararat.

E38 Moyston storage basin; Shire of Ararat.

E39 Cavendish storage; Shire of Dundas.

E40 Coleraine storage; Coleraine–Casterton Waterworks Trust.

- E41 Dunkeld storage; Shire of Mount Rouse.
- E42 Cruckoor Reservoir; Hamilton Waterworks Trust.
- E43 Hartwich Reservoir; Hamilton Waterworks Trust.
- E44 Service basins; Hamilton Waterworks Trust.
- E45 Tarrington storage; Shire of Dundas.
- E46 Tarrington storage; Shire of Dundas.

E47–E62 That the areas listed below and shown on the map remain or become reserved under section 4 of the *Crown Lands (Reserves) Act 1978* and be used for water supply purposes.

and that they be managed by the Department of Crown Lands and Survey.

Note:

These areas include springs and waterholes that may be used as watering points for stock, fire-fighting, or roadworks, or for other purposes requiring access to water.

- E47 6 ha, being the Water Reserve east of allotment 63, Parish of Jallakin.
- E48 3 ha north of allotment 34, Parish of Dopewora.
- E49 1 ha south-east of allotment 51, Parish of Goroke.
- E50 13 ha, being the Water Reserve east of allotment 16A, Parish of Kalingur.
- E51 5 ha, being the Water Reserve adjacent to the south-east corner of allotment 11 of B, Parish of Yallakar—part of Change Swamp.
- E52 2 ha, being the Water Reserve adjacent to the south-east corner of allotment 30, Parish of Konnepra—part of Konnepra Swamp.
- E53 2 ha, being the Spring Reserve north of allotment 23A, Parish of Harrow.
- E54 12 ha, being the Water Reserve south of allotment 57A, Parish of Toolongrook—part of Sandy Lagoon.
- E55 7 ha, being the Water Supply Reserve and adjacent Crown land in the Township of Douglas.
- E56 3 ha, being the Water Reserve adjacent to allotment 148, Parish of Toolondo.
- E57 2 ha, being the Water Reserve and adjacent unoccupied Crown land south of allotment 207F, Parish of Illawarra.
- E58 2 ha, being the Water Reserve north-east of allotment 161, Parish of Illawarra.
- E59 2 ha, being the reservoir east of allotment 213, Parish of Illawarra.
- E60 1 ha north of allotment 8, section 15B, Parish of Concongella South.
- E61 10 ha, being the Watering and Camping Reserve south of allotment 65A, section 15, Parish of Ararat—known as Norval Dam.

E62 1 ha, being the temporary Water Reserve, adjacent to allotment 20, Parish of Tyrendarra—known as Tanns Waterhole.

Note:

A number of small stream diversions on public land are used to supply water to limited areas such as picnic sites or farms. Although not covered by specific recommendations, the current licences or other arrangements for these facilities may continue.

F. HARDWOOD PRODUCTION

The stringybark and durable-species (gum and box eucalypt) forests of the south-west of the State have been supplying timber for heavy construction, farms, and house construction since the 1830s.

Outside the Grampians, alienation of land for grazing and cropping has greatly reduced the area of merchantable forests—particularly of the gum and box woodlands—and, for about 20 years after World War II, rural expansion coupled with soldier settlement schemes caused a rapid depletion in the availability of mature timber from the public land of the region.

Although not large by State standards, the wood-based industries make an important contribution to employment in the region. Moreover, they supply: sawn-timber products locally, to north-western Victoria, and to south-eastern South Australia; sleepers for the Victorian Railways; transmission and building poles; and fence posts.

Stringybark forests of commercial quality are located near Tyrendarra, Connewirrecoo, Bringalbert, and Telangatuk. The most extensive stands in the study area, however, are in the Grampians. Similarly, the more extensive areas of merchantable-quality durable-species forests are located in the Grampians area.

Silvicultural treatment of regrowth has been carried out in the stringybark forests in the Grampians and in many of the river red gum woodlands—including the larger areas at Woohlpooer, Kadnook, and Connewirrecoo. The characteristically slow growth rate of the durable-species forests means that even the silviculturally treated stands at Woohlpooer, which are now almost 100 years old, will be unable to produce the larger-dimension timbers for some time. The oldest stringybark regrowth should reach merchantable size in the 1990s.

Two areas of stringybark forest near Tyrendarra (see Recommendation F19 below) are contiguous with forested land in the South-western Area, District 1. In the final recommendations for that study area (published in April 1973), these two areas were included with the adjacent forests as hardwood production areas. A minor addition to one of these areas is included in the following recommendations (F18).

More than 30 500 ha of land has been recommended for hardwood timber production throughout the study area. These areas, together with the part of the Grampians to remain as State forest (33 600 ha), the uncommitted areas (25 000 ha) where timber production is also a permitted use, and the timber resources available from within the Grampians National Park, mean that more than 90 per cent. of the current hardwood timber resources of the study area remain available for utilization.

The Council realizes that the recommended hardwood production areas contain a mosaic of forests of varying productivity, including some parts that are unsuitable for timber production. These are nevertheless included for ease of management. Areas of significance for other values, such as water production, landscape, conservation, recreation, and apiculture may also be included in recommended hardwood production areas. Council has referred to the particular non-timber values that should be protected when management plans are being prepared.

Council endorses the practice that has been 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.

Furthermore, Forests Commission prescriptions within timber production areas normally apply restrictions in areas close to streams, on steep slopes, or of special landscape significance.

Council also endorses the Forests Commission's policies of preserving yellow box trees for apicultural purposes to the fullest extent practicable, and of integrating harvesting activities with use by apiarists.

Recommendations

F1-F19 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 and education
 - (ii) conserve native plants and animals, and provide opportunities for the development of wildlife conservation techniques
 - (iii) produce honey, forage, gravel, and other forest produce as defined in the *Forests Act* 1958
- (c) water production values be recognized and protected
- (d) the special values located in portions of some of the hardwood areas listed below be protected

(These values should be protected by management prescriptions. Where faunal values are of importance, the Fisheries and Wildlife Division should be consulted in the preparation of management plans. Of particular note is the value of all the forested areas throughout the south-western Wimmera plains for the conservation of the habitat of the Victorian sub-species of the red-tailed black cockatoo.)

and that the areas remain or become reserved forest under the provisions of the *Forests Act* 1958 and be managed by the Forests Commission.

F1 Tallageira (3860 ha)

F2 Morea (No-where-else) (3640 ha)

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

- (i) the wildlife values of Morea Lake and the other wetlands, and of the understorey of scarlet bottlebrush (*Callistemon macropunctatus*) in and adjoining the wetlands
- (ii) the very rare and localized flat sedge (*Cyperus flaccidus*)—found here growing with matted water starwort (*Callitriche sonderi*), which is also rare in this State, and the uncommon club-rush (*Scirpus australiensis*).

F3 Bringalbert (430 ha)

F4 Gymbowen (240 ha)

In accordance with (d) above, the wildlife values of Daleys Swamp should be protected.

F5 Kalingur (5430 ha)

F6 Meereek (4240 ha)

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

- (i) the areas of pink gum (*Eucalyptus fasciculosa*)
- (ii) the habitat of the yellow-bellied glider
- (iii) the wildlife values of the wetlands

Portion of this area overlies limestone deposits. Extraction of limestone may take place as the need arises, subject to the approval of the Forests Commission and the principles and guidelines set out in Chapter R (Mineral and Stone Production).

F7 Kadnook (600 ha)

F8 Connewirrecoo (1360 ha)

F9 Toolongrook (730 ha)

In accordance with (d) above, the wildlife values of Lake Culla Culla and its surrounds should be protected.

F10 Toolondo (3310 ha)

In accordance with (d) above, the wildlife values of the wetlands should be protected.

F11 Glenelg River (1100 ha)

In accordance with (d) above, the species of spurge (*Phyllanthus australis*)—one of only three Victorian records of this plant—should be protected.

Notes:

1. Where the land included in this recommendation adjoins the Glenelg River, and where no public land water frontage reserve has yet been delineated, a frontage of 40 metres should be set aside. The Forests Commission should manage this frontage in consultation with the Department of Crown Lands and Survey and the State Rivers and Water Supply Commission.
2. Should the 'river concept plan' being developed by the Department of Crown Lands and Survey for the Glenelg River require land—additional to that included in the frontage—to be managed in a particular way, the Forests Commission should manage that land accordingly.

F12 Marma (320 ha)

Notes:

1. The areas west of Mount William Creek are cleared and require revegetation.
2. Should the 'river concept plan' being developed by the Department of Crown Lands and Survey for the Wimmera River area require land—additional to that in the public land water frontage reserve—to be managed in a particular way, then the Forests Commission should manage that land accordingly.

F13 Wartook (520 ha)

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

- (i) the wildlife values of the wetlands in this area
- (ii) the communities of Grampians guinea-flower (*Hibbertia humifusa*)—a Victorian endemic of restricted distribution.

F14 Ledcourt (630 ha)**F15 Illawarra (1430 ha)**

In accordance with (d) above, the environs of the route of the historic Stawell to Heatherlie railway should be protected.

F16 Bellellen (730 ha)

The existing garbage depot in the western portion of allotment 66, Parish of Bellellen, may continue to operate (see Recommendation S3).

More than 150 flowering plant species have been identified in this area, including a unique community of curly chaff-rush (*Lepidobolus drapetocoleus*) and heathy phyllota (*Phyllota pleurandroides*)—both at the eastern-most limit of their distribution in the State—in a woodland of shining peppermint. In accordance with (d) above, the floristic values of the area should be protected.

F17 Jalluka (1165 ha)

- (i) This area contains the Ararat land system, which has limited occurrence in public land in the region. In accordance with (d) above, the floristic values of this area, including the stand of grey box should be protected.
- (ii) A stand of yellow box in this area shows evidence of having yielded bark for Aboriginal carrying-baskets; and extensive gold-mining throughout the area has left artefacts and mullock heaps.

In accordance with (d) above, the archaeologically and historically important sites should be protected.

F18 Tyrendarra (25 ha)**F19 Homerton (820 ha)**

G. HISTORIC RESERVES

Sites of historical importance associated with pre-European occupation—and European exploration, agricultural, and timber activities, settlement, and the exploitation of stone and gold—are found on both private and public land throughout the south-western area.

There is considerable interest in the community about the State's history. This interest is likely to increase, particularly as more becomes known about historical relics located on public land. Council considers that sites of historical interest should be managed to promote public awareness of the history of the area and that they should be protected as far as possible from progressive deterioration due to exposure to the weather and from damage by the public.

Historic Reserves are small areas that contain important relics, but generally have only one historical theme represented. Their size will generally preclude the development of recreational facilities, although some aids to interpretation could be provided.

Within the study area, many sites of historical importance have been included in parks or other reserves. Two sites relating to the gold-mining history, however, are included in Historic Reserves.

Recommendations

G1-G2 That the areas described below be used to:

- (a) protect specific sites that carry or contain the relics of buildings, equipment, construction works, and artefacts associated with the history of the locality
- (b) provide opportunities for recreation and education associated with the history of the locality (development of recreational facilities would be minimal)

that

- (c) use of these areas be such as to ensure the safety of visitors (in matters of public safety nothing in these recommendations affects the powers of Inspectors under the *Mines Act* 1958 and the *Extractive Industries Act* 1966; it is understood that in exercising these powers the managing authority would be consulted)
- (d) exploration for and the extraction of 'gold' and 'minerals'—including fossicking and prospecting under a Miner's Right—be permitted in accordance with Recommendations R1-R3
- (e) honey production be permitted
- (f) grazing be permitted at the discretion of the managing authority

and that the areas be permanently reserved under section 4 of the *Crown Land (Reserves) Act* 1978 and be managed by the Department of Crown Lands and Survey.

G1 Hand in Hand Company mine

8 ha, being the Water Reserve south of allotment 232, Parish of Illawarra.

G2 Deep Lead

4 ha, east of allotment 207A, Parish of Illawarra.

G1 contains the site occupied by one major company working a part of the 'deep lead'.

A number of relics are located in the area; these include:

- a large wash dump and mullock dump, with three fingers of mullock spreading out from the main dump
- an intact mining dam holding water—and channels used to run water throughout the area
- foundation outlines and an area of collapse identifying the main shaft location
- a series of well-preserved cyanide vats and the associated sand dumps (spreading from the reserve on to freehold land); these are of particular note.

The land surface of G2 is pitted with small shafts that have been subsequently filled in. Some shallow gravel extraction has also occurred in the past.

Whereas G1 is an example of the relics left behind by a large company mining a deep lead and the subsequent reworking by cyanidation of the slums, G2 is an example of the state of the land left by small parties and individuals mining the same lead. Together, these areas provide an important contrast for the interpretation of the gold-mining history of the region.

H. FLORA RESERVES AND FLORA AND FAUNA RESERVE

In addition to the floristic and wildlife values of the parks that have been recommended in the South-western Area, District 2, a number of areas contain native vegetation with considerable floristic importance. Others are important not only for their floral values but also because of the significance of wildlife populations and habitat.

Council has recognized the special conservation significance of these areas and has accordingly recommended their reservation as flora reserves or flora and fauna reserves. They are set aside primarily to conserve species that may be rare or endangered, and also other plant associations and animals that have particular conservation significance. Timber production from these areas would not be permitted.

In all such reserves, suppression of fires remains the responsibility of the Forests Commission. Appropriate fire-prevention measures such as maintenance of fire access tracks and protective burning will be carried out where necessary.

Vermin and noxious weeds within flora and flora and fauna reserves will be controlled and will remain the responsibility of the Department of Crown Lands and Survey.

FLORA RESERVES

These reserves are significant because they contain examples of native vegetation with considerable floristic value in a relatively natural state. They are set aside primarily to conserve species that may be rare or endangered, and other plant associations that are of particular conservation significance.

Recommendations

H1-H12 That the areas indicated on the map and described below be used to:

- (a) conserve particular species or associations of native plants that
- (b) honey production be permitted
- (c) passive recreation such as nature study and picnicking be permitted
- (d) grazing be phased out

and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and, except where otherwise stated (H4 and H7), be managed by the Department of Crown Lands and Survey.

H1 8 ha, being the John Smith Memorial Reserve, south-west of allotment 115, Parish of Darragan.

This area contains *Eucalyptus frogattii*, *Eremophila gibbifolia*, and other mallee species disjunct from the main areas.

H2 28 ha adjacent to allotment 79, Parish of Carchap.

This area, being the public land west of the former railway, contains one of the few stands of buloke on public land in the Horsham-Natimuk district. (As the species is an indication of good wheat country, almost all belts of buloke wood-

land were selected in the first decades of settlement.) In addition, it contains good examples of gilgai, which were typical of the regional Quaternary sedimentary land surfaces before ploughing was widespread—these formations should be adequately protected.

- H3** 19 ha, being two areas in the Township of Edenhope. The smaller one (5 ha), north of allotment 30B, Parish of Edenhope, includes and extends the existing Flora Reserve. The larger lies between the golf course and the Wimmera Highway. These areas have suffered considerable disturbance in the past—being public land close to a town. However, those portions from which sand has been extracted are regenerating successfully. These areas are within walking distance of Edenhope and are noted for their wildflower displays. They are used by school-children and the local field naturalists' groups for the study of the local flora.

- H4** 280 ha, being allotment 56, Parish of Meecreek.

To be managed by the Forests Commission.

This reserve is the western-most area for conserving a representation of river red gum–yellow gum woodland and brown stringybark forest in the State. Of greater importance, the rare species of pipewort (*Eriocaulon australasicum*) has been indentified on the margin of a shallow fresh-water marsh in this reserve. This species has been described by Willis (A Handbook to Plants in Victoria—1972) as 'extremely rare in Victoria, if still present, being known only by the type collection of Dec. 1853 . . . presumably also in New South Wales'.

The area also contains a number of wetlands, both in the woodlands and stringybark forest.

Although some minor timber production and buck-shot gravel extraction have occurred in the past, this area is in a near-natural state.

- H5** 132 ha west of allotments J, J1, and J3, Parish of Moyston.

This area contains a wide sample of the vegetation originally found growing on soils derived from the Pliocene sediments. Elsewhere in the district, these soils have largely been cleared for agriculture. Despite some minor timber harvesting and gravel extraction in the past, much of the area is in a healthy condition and it is a recognized venue, close to Ararat, for the study of orchids.

- H6** 32 ha, being allotments 5A and 5B, Parish of Bullawin.

This area contains *Eucalyptus yarraensis* at its western-most known occurrence and an unusual tall variety of *Banksia marginata*.

- H7** 12 ha, being allotment 4A1, section 10, Parish of Gatum Gatum.

To be managed by the Forests Commission.

This area contains remnant examples of the vegetation of the Dundas Tableland as well as the largest known stand of purple diuris (*Diuris punctata*) on public land in western Victoria, and possibly the western-most occurrence in Australia.

- H8** 13 ha, being the eastern part of the water supply reserve in the Township of Coleraine.

This area (Points Reserve) is being developed as an arboretum for Australian native plants.

H9 36 ha in the Parishes of Jerrywarook, Toolka, and Bulart.

This area consists of a Crown reserve, frontage, and islands in the Wannon River valley, and includes a series of rapids on Rocklands rhyolite. More than 180 native plant species have been identified here, comprising representatives of riverine and heathland vegetation—including 30 species not found elsewhere in the Wannon River valley.

H10 12 ha south of allotment 2, Parish of Toolka.

This contains one of the few remaining areas of native grass on the Dundas Tableland.

H11 8 ha west of allotment 1, Parish of Bochara.

This area contains more than 160 native plant species that now have limited occurrence elsewhere on the intensively farmed Dundas Tableland.

H12 32 ha north of allotment 130A, Parish of St. Helens.

This area contains one of the few remaining representative samples of swamp gum and manna gum woodland and heath on the coastal plains.

FLORA AND FAUNA RESERVE

This reserve has significance because it provides valuable habitat for populations of native fauna and contains examples of native vegetation with considerable floristic value in a natural or relatively natural state.

Recommendation

H13 That the area indicated on the map and described below be used to:

- (a) conserve native plants and animals that
- (b) honey production be permitted
- (c) passive recreation such as nature study and picnicking be permitted
- (d) grazing be phased out

and that it be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and managed by the National Parks Service. Management plans should be prepared by the management authority in consultation with the Fisheries and Wildlife Division.

This reserve comprises 8290 ha in the Parishes of Jilpanger and Toolongrook. Its sands, alluvial flats, and wetlands support more than 280 native plant species representative of the vegetation of the south-western Wimmera plains.

Brown stringybark is the dominant vegetation of the sand ridges and sand sheets, while the alluvial flats support river red gum and yellow gum woodlands.

Isolated stands of manna gum, swamp gum, grey box, black box, and buloke are also present, as well as a stand of salt paperbark fringing Mewett swamp. Several other wetlands, with a range of salinities, include the fresh-water Jilpanger Springs and the salt-water Mobla Lake.

Desert hakea (*Hakea muellerana*) and Mallee honey-myrtle (*Melaleuca neglecta*) form a series of small heaths in the eastern portion of the reserve, while pink bells (*Tetratheca* spp.), bush pea (*Pultenaea prostrata*), myrtle wattle (*Acacia myrtifolia*), spiny wattle (*A. spinescens*), and broombush (*Melaleuca uncinata*) are found growing on small ridges of exposed Parilla sandstones.

The silky desert mouse recorded in this area is at the southern limit of its range in the State and a flock of native companions (brolga) use the shallow wetlands, in suitable seasons, for nesting.

Along with the other forested areas of the south-western Wimmera plains, this reserve forms part of the habitat of the Victorian sub-species of the red-tailed black cockatoo. An endangered species, it now only occurs in this part of Victoria.

Legal access would continue to be available to any freehold land adjacent to this reserve.

I. BUSHLAND RESERVES

Throughout the predominantly agricultural regions of the study area, a number of parcels 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 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.

Council recommends that many 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. When accessible, they may also provide some opportunities for passive recreation in relatively natural surroundings, but it is not intended that they be developed for recreation. In many instances the only access is via an unused road covered by an unused-road licence, which should continue subject to the approval of the Department of Crown Lands and Survey. These bushland reserves are generally too small to have major significance 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. Limited gravel extraction, low-intensity grazing, and the cutting of small amounts of firewood and an occasional post and pole 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, railway lines, and lookout points. These uses may not be appropriate to all reserves. In some instances the management authority may have to exclude them, at least temporarily, in order to permit regeneration of tree species.

In all bushland reserves the suppression of fires remains the responsibility of the Forests Commission. Appropriate fire-prevention measures will be carried out where necessary.

Vermin and noxious weeds within bushland reserves will be controlled by and will remain the responsibility of the Department of Crown Lands and Survey.

Recommendations

11-191 That the areas indicated on the map and described below be used to:

- (a) maintain the local character and quality of the landscape that
- (b) passive recreation such as picnicking and walking be permitted
- (c) honey production be permitted
- (d) grazing be permitted subject to the approval of the management authority and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and managed by the Department of Crown Lands and Survey.

Notes:

1. Some reserves include relics of gold-mining activities that may, in some cases, constitute a hazard to public safety. The manager should comply with the public safety requirements of the Department of Minerals and Energy with regard to the mining relics.

2. A number of dams, located within the bushland reserves, are used for fire-protection, stock water, or Shire purposes and these uses should continue.

I1 14 ha between allotment 1, Parish of Benayco, and allotment 8, Parish of Tallageira.

Note: This reserve includes a large swamp that may be used to supply water for stock or other purposes.

I2 7 ha adjacent to allotments 55 and 56, Parish of Booroopki (at Laverys Corner).

I3 4 ha, being allotment 91B, Parish of Booroopki.

I4 105 ha west of allotment 35, Parish of Morea.

I5 4 ha on the southern boundary of allotment 35, Parish of Morea.

Note: This reserve includes a semi-permanent waterhole that may be used to supply water for stock or other purposes.

I6 1 ha south-west of allotment 19, Parish of Dopewora.

I7 16 ha, being allotment 28B, Parish of Mortat.

Note: This reserve includes a waterhole that may be used to supply water for stock or other purposes.

I8 32 ha, being allotment 73, Parish of Dopewora.

Note: Portion of this area is cleared and requires revegetation.

I9 98 ha, being allotment 38B, Parish of Goroke.

Note: Portion of this area is cleared and requires revegetation.

I10 3 ha, being the Water Supply Reserve north of allotment 52, Parish of Goroke.

I11 96 ha, being allotment 102, Parish of Goroke.

I12 59 ha, being allotment 101, Parish of Gymbowen and including the public land both north and south of the railway.

Notes:

1. This area contains a dam that may be used to supply water for stock or other purposes.
2. The old-growth brown stringybark forest on this area should be protected.

I13 235 ha, which comprises public land in the Township of Apsley both north and south of the Wimmera Highway and in the north-western corner of the Parish of Murrandarra.

Notes:

1. The Shire of Kowree may continue to use a limited area of this reserve as a garbage depot (see Recommendation S4).
2. This reserve does not include the area held under permissive occupancy by the Education Department (see Recommendation M5).

I14 7 ha adjacent to allotment 72B, Parish of Murrandarra.

Note: This reserve, on the northern side of the Wimmera Highway, contains a dam that may be used to supply water for stock or other purposes.

I15 7 ha north of allotment 10A, Parish of Jallakin (adjacent to the Edenhope-Boorooopki Road).

I16 12 ha, being allotment 34B, Parish of Awonga.

Note: Portion of this area requires revegetation.

I17 1.5 ha on the eastern boundary of allotment 17A, Parish of Jallakin (adjacent to the Edenhope-Bringalbert Road).

I18 117 ha, being the western part of allotment 16, Parish of Edenhope.

Note: This reserve does not include the school plantation (see Recommendation M5).

I19 90 ha, being allotments 96 and 97 in the south of the Parish of Awonga.

I20 11 ha north-east of allotment 17, section B, Parish of Yallakar.

I21 64 ha, being allotment 93, Parish of Charam.

I22 8 ha north-west of allotment 29, section A, Parish of Yallakar.

I23 26 ha, being allotment 34L, Parish of Kadnook.

Note: Portion of this area requires revegetation.

I24 110 ha, being allotment 81, Parish of Wombelano.

I25 53 ha, comprising the two adjacent Water Reserves on Reilly Creek: west of allotment 28A, Parish of Wombelano; and allotment 6, Parish of Harrow.

Notes:

1. This area contains dams that may be used to supply water for stock or other purposes.

2. Portion of the area requires revegetation.

I26 62 ha, being allotment 6A, Parish of Harrow.

I27 30 ha, being allotment 32, Parish of Meecreek.

I28 2 ha north-west of allotment 81, Parish of Kadnook.

I29 134 ha, being allotment 85, Parish of Kadnook.

I30 12 ha, being allotment 77A, Parish of Kadnook.

Note: This area borders the Glenelg River.

I31 18 ha east of allotment 23A, Parish of Kadnook.

Note: This area borders the Glenelg River.

I32 77 ha, comprising allotments 28A, 28D, and 29A, Parish of Connewirrecoo.

I33 91 ha, being allotment 17, Parish of Connewirrecoo.

I34 170 ha west of allotments 58 and 59, Parish of Tooan.

I35 3 ha west of allotment 61, Parish of Carchap.

I36 1.5 ha south of allotment 13, Parish of Toolondo.

I37 8 ha, being allotment 29B, Parish of Kout Narin.

I38 31 ha, being allotment 100, Parish of Kout Narin.

I39 40 ha, being allotment 90B, Parish of Kout Narin.

I40 4 ha east of allotment 83A, Parish of Telangatuk.

I41 38 ha, being allotment 16, section 13, Parish of Balmoral.

I42 7 ha, being the Water Reserve, north of allotment 106, Parish of Telangatuk.

Note: Portion of this area requires revegetation.

I43 120 ha, being Reserved Forest north of allotment 16, Parish of Daahl.

I44 16 ha, being allotment 51F, Parish of Connangorach.

Note: This area contains a small dam that may be used to supply water for stock or other purposes.

I45 126 ha, being allotment 65A, Parish of Connangorach.

Note: The old-growth brown stringybark and yellow gum and the high floristic value of this area should be protected.

I46 57 ha, being allotment 64C, Parish of Connangorach.

Note: The high floristic and archaeological values of this area, known as Red Rock, should be protected.

I47 6 ha, being the Water Reserve, south of allotment 14, Parish of Mockinya.

Note: This excludes the area occupied by the recreational facilities (Brimpaen).

I48 6 ha, being the departmental reserve north-east of allotment 24G, Parish of Bungalally.

Note: This reserve does not include the school plantation (see Recommendation M5).

I49 62 ha, being the Timber Reserve, west of allotments 4 and 5, Parish of Bungalally.

Notes:

1. A small area of this reserve is used as a stacking site for stone from a private quarry.
2. The northern portion of this reserve may continue to be used for environmental education purposes.

I50 78 ha, being the Timber Reserve, west of allotment 8, Parish of Bungalally.

I51 53 ha, being the Water Reserve (Tyer Swamp) west of allotment 212, Parish of Bungalally.

Note: This area has been heavily cut-over for posts and firewood and now requires revegetation; it also contains a shallow wetland, which is of value for waterfowl.

I52 19 ha, being a Public Purposes Reserve, allotment 168A, Parish of Bungalally.

Note: Trees on this area have been considerably reduced in number—it now requires revegetation.

I53 7 ha, being allotment 12, Parish of Lah-arum.

I54 5 ha, being the northern portion of allotment 223, Parish of Ledcourt (north of the channel).

I55 1.6 ha north of allotment 89, Parish of Gampola.

I56 3 ha south of allotment 30B, being Crown land on both sides of the road reserve, Parish of Gampola.

Note: This area contains a dam that may be used to supply water for stock or other purposes.

I57 3 ha adjacent to allotment 260, Parish of Ledcourt.

I58 12 ha, being the Water Reserve and adjacent unoccupied Crown land south-east of allotment 215, Parish of Illawarra.

Note: This area contains an old mining dam that may be used to supply water for stock or other purposes.

I59 35 ha, being the former Public Gardens Reserve (west of allotment 99A) and unoccupied Crown land south and west of allotment 99B and east of allotment 185, Parish of Illawarra.

Notes:

1. This reserve contains some relics of the gold-mining era, including a dam that may be used to supply water for stock or other purposes.

2. When gravel extraction works are completed, the area affected should be revegetated.

I60 26 ha south of allotment E1, Parish of Illawarra.

I61 9 ha, being the former Gravel Reserve south of allotment 152A, Parish of Illawarra.

I62 10 ha south of allotment 60, Parish of Illawarra.

I63 15 ha, being the former Gravel Reserve west of allotment 78, Parish of Mokepilly.

I64 10 ha, being the former Quarry Reserve north-west of allotment 74, Parish of Mokepilly.

I65 11 ha, being the former Quarry Reserve, allotment 81A, Parish of Mokepilly.

I66 3 ha, being the former Quarry Reserve surrounded by allotment 37, Parish of Mokepilly.

- I67** 13 ha, being the former Water Reserve and adjacent unoccupied Crown land east of allotment 23, Parish of Mokepilly.
- I68** 75 ha, being Crown lands containing the original bed of Fyans Creek—north of the State Rivers and Water Supply Commission channel that now diverts the entire flow of the creek—Parish of Boroka.
- I69** 3 ha north of allotment 21, Parish of Bellellen.
- Note: This area contains a dam that may be used to supply water for stock or other purposes.
- I70** 4 ha north-east of allotment 87, Parish of Bellellen.
- I71** 6 ha west of allotment 82, Parish of Bellellen.
- I72** 5 ha north-east of allotment 11B, section 2, Parish of Jallukar.
- I73** 5 ha east of allotment 6A, section 2, Parish of Jallukar.
- Note: This excludes the Pomonal school site and the water supply area (Recommendation E37).
- I74** 7 ha west of allotment 17A, section A, Parish of Moyston West.
- I75** 4 ha, being the former Water Reserve and School Reserve west of allotment M, in the north of the Parish of Moyston.
- Note: Part of this area requires revegetation.
- I76** 20 ha, being the former Water Supply Reserve south of allotments 52M, N, O, and P, Parish of Moyston.
- Note: This area contains a dam that may be used to supply water for stock or other purposes.
- I77** 15 ha east of allotments 122A and 122B, Parish of Moyston, and south of the southern boundary of the Township of Moyston.
- I78** 2 ha, being the eastern portion of allotment 129, Parish of Moyston.
- Notes:
1. This area contains a spring and a dam, which may be used to supply water for stock or other purposes.
 2. Portion of this area is cleared and requires revegetation.
- I79** 12 ha west of allotment 100 of 15, Parish of Ararat.
- I80** 36 ha east of allotment 98B, section 15A, Parish of Ararat, abutting stone production area R15.
- Note: This reserve contains relics of the gold-mining era.
- I81** 4 ha, being the Stock and Camping Reserve south of allotment AA16, Parish of Lexington.
- I82** 46 ha, being the Timber Reserve adjacent to allotment 9, Parish of Lexington.

I83 8 ha, being allotment 15 and the unoccupied Crown land to the east (but not including the Cemetery Reserve), Parish of Burrumbeep.

I84 7 ha north of allotment 28, Parish of Tarrayoukyan.

I85 10 ha west of allotment 70A, Parish of Wookurkook.

Note: Part of this area requires revegetation.

I86 12 ha, being the Water Reserve north-west of allotment 2, section 3, Parish of Gritjurk.

Note: The vegetation on this reserve is a remnant of that of the Dundas Tableland and should be protected.

I87 24 ha north of allotments 9 and 12, section 12, Township of Cavendish, on either side of the Henty Highway.

I88 3 ha north-west of allotment 3A, Parish of Geerak.

I89 45 ha, being allotment 58B, section A, Parish of Mirranatwa.

I90 3 ha, being allotment 76A, Parish of Broadwater.

I91 14 ha south-east of allotment 92, Parish of Broadwater.

J. THE COAST

The coastline of the State is a resource of great value for recreation, for nature conservation, and for the preservation of features of historical interest.

In formulating recommendations for public land along the coast, Council is aware that coasts represent a dynamic zone of interaction between land and sea, encompassing fragile environments. The various management authorities of coastal land should take steps to ensure that management is co-ordinated.

All works to be implemented by committees of management or government agencies on the coastal reserve should be conducted in accordance with plans approved by the Coastal Management and Co-ordination Committee.

COASTAL RESERVE

A coastal reserve is an area of public land on the coast set aside primarily for public recreation, education, and inspiration in coastal environments. Coastal areas specifically reserved for some other purposes (parks, wildlife reserves, sites for navigational aids, or major ports) would not be included in the coastal reserve.

The coastline included in these recommendations is bounded by the entrances of the Fitzroy and the Eumeralla Rivers, and includes Lake Yambuk. Except near the lake, public land on the seaboard is restricted to a thin line of fragile sand dunes and has been somewhat reduced in width by coastal erosion.

Aboriginal middens occur frequently along this portion of the coast; one near Lake Yambuk has been excavated.

Lake Yambuk, an estuarine lagoon, is significant as a stronghold of the dwarf galaxiid, and is of value as a habitat for wading and marsh-dependent birds; including the migratory wader—the sanderling.

Recreational use is concentrated near the entrances to the two rivers, where there is public access to the coast.

Recommendation

J1 That the area described below and shown on the map:

(a) be used to:

- (i) provide opportunities for informal recreation for large numbers of people, and also for recreation related to enjoying and understanding nature
- (ii) protect and conserve natural coastal landscapes and ecosystems—and geomorphological, archaeological, and historical features—for public enjoyment and inspiration and for education and scientific study
- (iii) ensure the conservation of both aquatic and terrestrial fauna and flora

- (iv) provide facilities for fishing and boating (including harbor facilities) together with the necessary navigation aids

that the management authority:

- (b) zone the area in order to provide for the range of uses outlined above
- (c) manage the area according to the policies developed by the Coastal Management and Co-ordination Committee in consultation with the municipalities or Committees of Management, and, in the case of Lake Yambuk, in consultation with the Fisheries and Wildlife Division
- (d) in its policies for the coastal reserve, recognize the following principles:
 - (i) new roads should not be sited along the coast, but rather should be located far enough back in the hinterland to avoid damaging sensitive environments or impairing the scenic qualities of the coastal landscape
 - (ii) any major coastal development projects should be subject to a detailed environmental study prior to commencement by the body proposing such development (examples of such projects would include proposals for jetties, marinas, mining, sea walls, etc.)
 - (iii) occupation of coastal public land by individuals or organizations should be phased out, and no new occupation leases should be granted
 - (iv) when camp sites and car parks are to be established on the coastal reserve, the management authority should avoid locating these on sensitive areas or areas of importance for nature conservation, or of archaeological significance

and that

- (e) the area be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* as coastal reserve, the seaward boundary being low-water mark, and be managed by the Department of Crown Lands and Survey.

This reserve includes the public purposes reserve south of allotment 47H, Parish of Tyrendarra, extends to and includes Lake Yambuk, and includes the unused-road reserve that parallels the coast in the Parish of Tyrendarra.

K. 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 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 licenses 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 suggests that this situation should change.

Maintenance of a stable vegetative cover on frontages can contribute significantly to water quality by filtering overland flow and by reducing soil contamination of water. Public land water frontages are frequently valuable for preserving local landscapes. They may also be valuable for nature reservations, 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. Frontages of the Wimmera River, Mount William Creek, Burnt Creek, McKenzie River, Norton Creek, Darragan Creek, Glenelg River, and Wannon River carry riparian vegetation of outstanding quality. These streams pass through country that contains few, if any, other areas of public land. In too many cases, however, the provisions of the relevant *Acts* have not been enforced effectively, and public land water frontages have been progressively cleared of native vegetation. Such a situation now exists along sections of the Hopkins River, south of Ararat.

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, whether 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

K1 That the public land water frontages

(a) be used to

- (i) protect adjoining land from erosion by the maintenance of 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 creation of buildings on public land water frontages

and that

- (d) (i) public land water frontages be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978*
- (ii) where an area currently reserved as a water frontage is adjacent to or within land reserved for a specific purpose, it be managed by the authority responsible for the adjoining or surrounding land
- (iii) where it is not within or adjacent to a reserve 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.

Notes:

1. Of particular value are the frontages and other areas of public land associated with the Wannon River between Cavendish and Wannon Falls. Here the river has eroded through the Dundas Tableland—exposing the underlying Rocklands Rhyolite—in many places forming a deep valley with scenically attractive features.

Extensive remnants of native vegetation are found along the public lands of this valley. More than 350 native plant species have been identified, a number of which form outlier populations that are uncommon in the area. This section of the river also provides an important migratory corridor for native fauna—made more important by the lack of other forested land nearby.

Council has recommended the designation of flora, scenic, and streamside reserves where appropriate for sections of the valley. The Council believes, however, that the management of all the stream frontages should be consistent with the protection of the high natural values.

2. The remnant vegetation along frontages of the Wimmera River tributaries is reported to support the bush thick-knee, a bird species that is seen only infrequently in the Wimmera and has disappeared from much of its original range in Victoria.

RIVER IMPROVEMENT

River Improvement Trusts have been constituted under the *River Improvement Act* 1958 for sections of rivers throughout the State; although none, as yet, have been constituted for streams in the study area. The Yarchaw Drainage Trust, however, has modified the bed and banks of Muddy Creek—near Hamilton—to assist in the drainage of water from private lands.

The policies and recommendations outlined below should apply to any Trust that may be formed in the future.

Improvement works in 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, 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.

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, accelerating 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 régimes.
- * Regulation of stream flow by water storages and use of streams to transport water for irrigation and domestic use also change the natural flow régime.
- * 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 legislation requires that all proposed replacements or new structures across waterways or other interference with the bed and banks of streams 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. Realignment 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.

River Improvement Trusts are required to act within the District as defined under the *River Improvement Act* 1958. Where such Districts encompass only the stream environs, or part only of the stream, they may be 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. There is thus little opportunity in the design and implementation of works for consideration of their likely impact on areas outside the Trust's Districts. However, the Standing Consultative Committee on River Improvement, an advisory committee formed by the State Rivers and Water Supply Commission in examining a Trust's works program, has regard for the effects of such works on the upstream and downstream régime.

The flow régimes 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 apply 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.
- * Where flood control in a catchment is necessary, planning strategies should include consideration of ways of reducing run-off from the catchment.
- * Total flood control is seldom practicable. In the case of minor flooding it may often be more appropriate to take action to minimize the consequences of flooding rather than 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 of their effect on the flood pattern (see note 3).
- * 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.

Recommendation

- K2** 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.

Notes:

1. The State Rivers and Water Supply Commission has formed a Standing Consultative Committee to advise the Commission on river works. This committee comprises representatives from the following:

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

The Committee is convened by a representative of the State Rivers and Water Supply Commission.

2. The State Rivers and Water Supply Commission, with the assistance of the Standing Consultative Committee, has prepared a document, 'Guidelines for River Management, 1979', that expands on the principles set out above. These guidelines require plans for all works (other than those of a minor nature), together with an assessment of their environmental consequences, to be submitted to all relevant agencies for consideration prior to the commencement of works. The aim of the guidelines is to ensure that an optimum balance is achieved between structural improvements 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.

3. Information relating to the works that may be undertaken on flood plains is included in the report 'Flood Plain Management in Victoria', produced by the Victorian Water Resources Council.

STREAMSIDE RESERVES

In many instances, small blocks of public land adjoin streams but are not included in the public land water frontage.

These blocks have, where appropriate, been designated streamside reserves. Some of them are currently reserved under section 4 of the *Crown Land (Reserves) Act 1978*; others are unreserved Crown land, although they may be licensed for grazing. Vegetation on these areas varies from woodland to open grassland. Every effort should be made to conserve native trees on these reserves, where they exist, and to encourage regeneration or restoration where the vegetation has been depleted or destroyed.

Blocks of public land such as these have values for nature conservation and recreation. They allow public access to the river or stream, especially where access along the public land water frontage is difficult. The management authority may provide facilities for activities such as camping on streamside reserves in areas where conflict with nature conservation values are minimal.

It is intended that public land water frontages adjacent to or within a streamside reserve be managed by the authority responsible for that reserve.

Streamside reserves are separate and distinct from the public land water frontage described earlier in these recommendations.

Recommendations

K3-K10 That the areas shown on the map and described below be used to:

- (a) provide passive recreation such as picnicking, walking, and angling
- (b) provide opportunities for camping at the discretion of the management authority if this does not conflict with the maintenance of the water quality of the adjacent stream
- (c) provide a buffer zone for protection of water quality
- (d) conserve flora and fauna

- (e) maintain the local quality and character of the landscape
 - (f) provide grazing, at the discretion of the management authority, if this does not conflict with the maintenance of the water quality of the adjacent stream or with (a), (b), (c), and (d) above
- and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and, except where otherwise specified (K3, K5), be managed by the Department of Crown Lands and Survey.

- K3** 40 ha east of allotment 3, Parish of Marma (between the Wimmera River, Mount William Creek, and an anabranch of these streams). To be managed by the Forests Commission.
- K4** 12 ha east of allotment 137, Parish of Harrow (beside the Glenelg River at Mooree).
- K5** 860 ha, being public land fronting the Glenelg River in the north of the Parish of Balmoral.
To be managed by the Forests Commission.

Notes:

1. Grazing should be removed from allotments 16, 17, and 18 and from the north-western portion of the reserve to permit the regeneration and maintenance of the variety of important plant species in these areas; these include Mallee species that are uncommon in this region:

- slender cypress pine (*Callitris preissii*)
- porcupine grass (*Triodia irritans*)
- Mallee honey-myrtle (*Melaleuca neglecta*)

and 10 species of sun-orchid, including three uncommon or rare species:

- globe-hood sun-orchid (*Thelymitra chasmogama*)
- fringed sun-orchid (*T. luteocilium*)
- crimson sun-orchid (*T. macmillanii*)

2. The currently mature trees should be retained; however, in the future, some timber products may be supplied from the regrowth—when it reaches a merchantable size—from the area outside those described in Note 1 above.

It may also be necessary for grazing to be withdrawn, at least temporarily, from this area to allow regeneration of timber species.

3. Any development for recreation should take place outside the areas described in Note 1 above.

- K6** 22 ha west of allotments S1 and T, Parish of Jallukar (beside Mount William Creek, south-east of Pomonal).
- K7** 40 ha west of allotments 44A and 44B Parish of Moyston, and east of allotments 6 and 7, Parish of Moyston West (on both sides of Mount William Creek).
- K8** 11 ha east of allotments 30B and 31B, Parish of Merrybuela (between the Ararat-Dunkeld road and the Hopkins River).

- K9** 4 ha, being the Water Reserve north-east of allotment 1, section 13, Parish of Bruk Bruk.
- K10** 10 ha east of allotment 5B, Parish of Toolka, and west of allotment 2, Parish Jerrywarrock (on both sides of the Wannon River).

Note:

Grazing should not be permitted in this reserve.

L. ROADSIDE CONSERVATION AND HIGHWAY PARKS

ROADSIDE CONSERVATION

The primary purpose of road reserves is obviously to provide for communication, transport, and access. However, vegetation along the road verges can have particularly high conservation, recreation, and landscape values, especially in agricultural districts where most of the native vegetation has been cleared.

Nature conservation

Vegetation on roads is important for nature conservation because it often contains the only remnants of the region's native plant associations. Such remnants are valuable for preserving species with restricted distribution and genetically interesting variance of widespread species. They are often useful in land studies, as they may permit the original pattern of the vegetation to be pieced together. They also provide habitat for some native animals, and have special significance as pathways permitting birds to move through the countryside on annual migration, or in search of food or nesting sites. While some roads retain wide strips of native vegetation, many are mostly cleared or otherwise greatly altered. Valuable remnants of native vegetation growing on the verges of some roads should be protected where possible. Of particular note is the vegetation along roadsides on the flat, open Wimmera plains (such as the Mallee species on the Norton-Narrabiel road and buloke on roadsides north of Edenhope). Roadsides on the tablelands south-west of the Grampians, where there is otherwise very little public land, are also of note; particularly along the Gringe Dip Road which contains valuable representation of the tablelands vegetation, and along Satimer Road reserve where snow gum is found.

Accumulation of fuel along roadsides is a fire hazard of concern to fire-control authorities and it must often be reduced by burning off during cool weather. This burning off sometimes conflicts with scenic and conservation values and the Council believes that such burning should be restricted to strategically important areas and kept to the minimum consistent with efficient fire protection.

Recreation and landscape

In rural districts vegetation along roads is often a major component of the landscape, breaking the monotony of cleared paddocks and accentuating the contours of the land. It provides a pleasant, variable road environment for motorists, and shady areas for rest and relaxation. The Council believes that as much roadside vegetation as possible should be retained when roads are being upgraded. If a major upgrading is being planned, the feasibility of purchasing a strip of private land should be considered in order to preserve good stands of roadside vegetation.

Salinity prevention

In this area, where dryland salting is becoming an increasing problem, roadside trees play an important role in mitigating the effects and extent of salinization. These trees, often the only remaining trees in the area, play a vital part in the interception of saline subsurface moisture.

Management

Responsibility for the management of roadside vegetation is vested in various authorities, depending on the status of the road. The most important roads of the State (State highways, tourist and forest roads, and freeways) declared under the *Country Roads Act 1958* are completely under the control of the Country Roads Board (9000 km). Main roads (14 500 km) are also declared, but are controlled jointly by the Country Roads Board and local municipal councils. Vegetation on unclassified roads (about 98 000 km of mostly minor roads) is under the care and management of municipal councils, although it is owned by the Crown. The Forests Commission has the control of vegetation on unclassified roads that pass through or adjoin State forests. (Note: These figures are for all Victoria.)

Unused roads constitute another category. When the State was being settled, surveyors provided access to blocks by means of surveyed Crown roads. Many of these have never been used as roads, and they are usually held by the occupiers of the adjoining land under unused-road licences. The Forests Commission controls the vegetation on unused roads that have been formally declared as such.

Back roads

With increasing population and use of cars, a tendency has developed for through-roads in the study area to be continually upgraded. Tree-lined back roads with gravel surfaces on narrow winding alignments are becoming increasingly uncommon. Yet for many people such roads best fulfil their need for contact with rural environments. The Council believes that a conscious effort must be made to maintain the character of these roads, particularly when upgrading or realignment is being considered.

Recommendations

- L1 That road reserves throughout the study area continue to be used for communication, transport, access, surveys, and utilities.

Landscape, recreation, and 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.
- * 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 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 of 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.
 - * On soils of moderate to high erosion hazard, road management authorities should ensure that pre-planning, design, construction, and funding of roads cater adequately for erosion prevention and control. Advice should be sought from the Soil Conservation Authority.
- L2** That when widening or re-alignment of roads is proposed, sites of geological, historical, or habitat significance that may be affected be investigated and every effort made to retain or preserve them.
- L3** That the following guidelines be applied to unused roads:
1. The clearing of native trees and shrubs other than noxious weeds should continue to be clearly prohibited in the conditions of unused-road licences.
 2. 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.
 3. 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.

Highway parks

Along some of the roads, the reserve carries picnic areas and wayside stops, but along the major tourist routes there is an additional need for areas sufficiently large to allow travellers to be isolated from the road environment and to allow dispersion of picnickers. These areas should have scenic qualities, perhaps incorporating a stream, and be sufficiently stable to withstand intensive use. They would be used by travellers for relaxation and picnicking and should be adequately developed with picnic and rest facilities (fireplaces, tables, etc.).

Recommendations

- L4—L5** That the areas indicated on the map and described below be used:
- (a) for picnicking and to provide relaxation for the travelling public

(b) to maintain the local character and quality of the landscape that

(c) facilities in keeping with the nature of the reserve be provided

and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978*, and managed by the Department of Crown Lands and Survey.

L4 145 ha adjacent to the Wimmera Highway, being Bates Lake and surrounding public land.

L5 35 ha adjacent to the Henty Highway at Cherrypool.

Roadside picnic areas

Smaller less-developed picnic areas should supplement the system of highway parks and major reserves. Unlike highway parks, these would not be sufficiently large, nor developed to the high standards necessary, to cater for large numbers of people. They should be in attractive locations, off the road reserve, and should have some picnic facilities provided.

Recommendation

L6 That the land management authorities establish picnic areas in suitable locations adjacent to the road reserves.

M. EDUCATION AREAS AND SCHOOL PLANTATIONS

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 is indispensably linked with 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 (including parks, wildlife reserves, and hardwood production areas) 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 the manipulation of the land for the primary use that makes the area of value for environmental education. Council believes, however, that it is necessary for some relatively undisturbed land to be set aside specifically for educational 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 the educational use. Activities permitted in 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. They may also provide opportunities to demonstrate techniques of erosion control and the restoration of native vegetation and stream conditions to a more natural state.

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

- * giving examples of major land types
- * with maximum diversity of vegetation types, 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 the 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 the one site several times. Minimum facilities such as toilets and shelters would be required at each education area, and it would be desirable to have accommodation either on the area or at some nearby locality. Whether or not accommodation facilities are located on the education 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, accommodation and other permanent facilities should only be provided where adequate safeguards against fire can be made.

Council believes that the land management of education areas 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 usage of the areas.

Recommendations

M1-M4 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 education areas 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 4 of the *Crown Land (Reserves) Act 1978* and managed by the National Parks Service.

M1 Black Waterhole (250 ha)

Quaternary sediments: flat alluvial deposits and low dunes of aeolian sands; fresh-water wetlands; woodlands of buloke, greybox, river red gum, and yellow gum and low open forests of brown stringybark with Oyster Bay pine; elevation 200 m; approximate annual rainfall 500 mm.

Note:

This area includes some sites that have been stripped for buckshot gravel.

M2 Potter Creek (400 ha)

Recent colluvium (outwash slopes from Grampians sandstones), lateritized Pliocene sediments, Quaternary sediments; undulating; open forest I of brown stringybark, woodlands of yellow gum and yellow box, manna gum, and swamp gum along the drainage lines; elevation 230 m; rainfall 550 mm.

M3 Wannon Divide (275 ha)

Silurian to Lower Devonian sandstones (Grampians Group), Recent colluvium; dip slope with an eastern escarpment; open forest of messmate and brown stringybark, open scrub, heath, and rock associations; elevation 420-520 m; rainfall 800 mm.

M4 Mount Napier (350 ha)

Recent basalt: stony rises and including a low hill of basalt and scoria, an explosion crater and a partially quarried scoria hill; manna gum woodlands; elevation 200-280 m; approximate annual rainfall 725 mm.

SCHOOL PLANTATIONS

Throughout the study area, numerous areas of public land have been set aside as school endowment plantations as part of various schools' educational resources. The plantations were initially established to instil through community involvement a love of forests and an appreciation of their value, and in fact many of them are well suited for regular

use as a teaching resource of this nature. It is expected that this use will increase as courses embracing various aspects of environmental science are developed. Many school plantations have been planted to radiata pine, and revenue from the sale of produce has been used to provide amenities required by the schools. In some cases, however, these plantations have not been very successful in providing revenue, as the sites are unsuitable for economic growth or the plantations are too small or the location too far from processing centres to allow economic harvesting. In some instances, radiata pine plantations have failed due to poor management.

Council believes that all the existing plantations should be assessed in order to establish their value as a teaching resource. The use of those that are not now needed or that are unsuitable for teaching purposes for some reason, such as their location, should be terminated. Those planted to radiata pine that have limited value as a teaching resource although satisfactory for wood production may continue to be used for such production, but should be reviewed when the pines are harvested.

Unused sand or gravel pits, or cleared areas such as former school sites, require rehabilitation or revegetation. Council considers that, in some instances, such areas could be used as school plantations. Their rehabilitation not only could be used to demonstrate various aspects of environmental science but also could provide an opportunity to involve pupils in projects that are clearly in the public interest.

It should be realized that most of the public land in the State is available for some form of educational use, and education areas have been recommended specifically for this purpose. While, as indicated in the section on youth camps, the Council is not in favour of setting aside land exclusively for the use of any one organization, schools wishing to use an area of nearby bushland for teaching purposes should consult with the appropriate managing authority. Their use of such an area should be in harmony with the manner in which the surrounding public land is used.

Recommendations

M5 That areas set aside for school plantations be primarily used as a teaching resource and utilized to foster awareness and knowledge of the trees and other living organisms that comprise a forest.

Note:

This recommendation does not exclude the use of school plantations as a means of raising revenue for schools. Such use, however, should be secondary to the educational use.

M6 That the value of each existing school plantation as a teaching resource or for revenue production be assessed by the Education Department—in consultation with the Forests Commission and the Department of Crown Lands and Survey, where appropriate—and that the use of those considered unsuitable or no longer required be terminated.

M7 That new school plantations only be established on public land for education purposes and where their establishment allows the rehabilitation or reforestation of cleared or eroded areas.

N. LAKE RESERVES

Of the numerous lakes in the study area, the majority are located in the interdune areas of the south-western Wimmera plains and form a complex system of wetlands of various depths and salinities. Most of these wetlands remain in public ownership, although many are surrounded by farmland and have been cleared—at least partially—of trees, and the majority are grazed.

Some of the public land lakes are reserved for 'public purposes', but others are simply unreserved Crown land. The Council considers that, while 'public purposes' reservations have in the past served to protect particular lakes, the value of the whole system has not been recognized.

Both capability and current use of the individual lakes vary widely. Scenic quality varies from picturesque to barren and unattractive, and similar quality variations occur for uses such as recreation (mainly boating and angling), wildlife conservation (particularly waterfowl), water supply, and drainage. The ephemeral nature of many lakes also leads to a variation of uses and values with time on individual lakes. Higher water levels provide, for example, better conditions for recreation and irrigation, while lower levels provide a generally more saline habitat, with different classes of birds frequenting the lake. In some cases, a lake may dry up completely and remain until the next wet season as either a bare salt pan or a fertile plain that can be used for agriculture.

The natural water levels in some lakes are manipulated—either by deliberate drainage or by pumping for irrigation. Fresh-water lakes support more diverse ecosystems than the saline ones and are thus valuable for nature conservation, but they also suffer from a larger number of competing pressures.

Public access to many of the lakes can only be gained by entry through freehold land, as no public land exists beyond the water's edge. In other cases there is legal public access along unmade roads that are cleared and grazed under licence by adjoining landholders.

Council nevertheless considers that, although in some cases legal access should be made more easily usable, sufficient public access is available to meet the present and foreseeable recreation demand. The isolation of some lakes enhances their value for waterfowl conservation and scientific study, through a reduction in competing pressures. Availability of public access through freehold land is presently determined by the owners of the land, and nothing in these recommendations suggests that this situation should change.

Form of reservation

In preparing its recommendations, Council has considered the various competing uses for and the capabilities of each lake separately as well as considering the system as a whole. Those lakes with high wildlife values and where wildlife conservation is the prime use have been recommended as wildlife reserves (see Chapter D).

Some of the lakes have been recommended as lake reserves; this establishes a secure form of tenure and gives the managing authority flexibility to introduce those controls necessary to protect the values both of specific lakes (where no one value may predominate) and of the system as a whole, while providing for existing legal uses to

continue. The managing authority will be able to set up local committees of management and can frame and enforce regulations that are specific to a particular lake. This will ensure that proposals for use can be evaluated in relation to the capabilities of the particular lake and to the impact on the system as a whole.

Recommendations

N1-N23 That the lakes described in the schedule below and shown on the map be used, according to their particular capabilities, for:

- (a) recreation
- (b) wildlife conservation
- (c) scientific study
- (d) water supply
- (e) drainage

that

- (f) current legal use for low-intensity grazing be permitted under the control of the managing authority (such control may involve exclusion of grazing, at least temporarily, from some reserves)

and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the Department of Crown Lands and Survey, which may delegate management where appropriate; there should be consultation with the State Rivers and Water Supply Commission and the Fisheries and Wildlife Division regarding management of these reserves.

- N1** Lake Boikerbert (Newlands Lake) and adjacent bushland (177 ha), Parish of Boikerbert.
- N2** Dumbopperty Swamp, Lake Bringalbert, and adjacent bushland (325 ha), Parish of Booroopki.
- N3** Booroopki Swamp and surrounds (455 ha), Parish of Booroopki.
- N4** Lake Charlegraak and surrounds (55 ha), Parish of Booroopki.
- N5** Lake Carpolac (54 ha) in the north-west of the Parish of Awonga.
- N6** Lake Yallakar (300 ha) in the south-east of the Parish of Awonga.
- N7** Collins (Parsons) Lake (23 ha); fresh-water lake, north of allotment 8B, Parish of Edenhope.
- N8** Scrubby Lake (32 ha); deep fresh-water marsh surrounded by allotments 27, 28 and 23, section C, Parish of Yallakar.
- N9** Lake Ratzcastle, including Kangawall Lagoon and associated open scrub and woodland (totalling 437 ha), in the north-west of the Parish of Karnark.
- N10** Maryvale Swamp-Lake Charam (109 ha); fresh-water lakes, allotments 4 and 6A, Parish of Charam.
- N11** Murranbool Swamp (78 ha) in the south-east of the Parish of Charam.
- N12** Miga Lake (120 ha) in the centre of the Parish of Turandurey.

- N13 Unnamed lake (29 ha) in the south of the Parish of Konepra.
- N14 Lake Dollanoke (50 ha) in the centre of the Parish of Wombelano.
- N15 Lake Jaracteer (40 ha); brackish lake and surrounds, east of allotment 46c, Parish of Wombelano.
- N16 Lime Kiln Lake (8 ha) in the centre of the Parish of Harrow.
- N17 St Marys Lake (113 ha) in the north-west of the Parish of Tooan.
- N18 Clear Lake (150 ha) in the centre of the Parish of Carchap.
- N19 Swannee Lake (21 ha) in the centre of the Parish of Toolongrook.
- N20 Freshwater Lake and nearby saline wetlands (57 ha) (including surrounding public land) in the east of the Parish of Panyyabyr.
- N21 Walker Swamp (20 ha) east of allotment 1, section 20, Parish of Bunnugal.
- N22 Lake Doling Doling (48 ha) in the east of the Parish of Hamilton North.
- N23 Unnamed swamp (9 ha), being Crown land east of allotment 7A, section 12, Parish of Murndal.

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 undertaken with little or no feeling of compulsion are almost certainly recreation.

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

- * Formal recreational 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 enjoying 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. For example, the camping sites at Mount Arapiles, Lake Fyans, and Zumsteins would be considered to be intensively used.

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 making its recommendations, has suggested that the bulk of public land should be available for recreational uses of some sort. Accordingly, it has set aside a variety of reserves that will provide for a wide range of opportunities. Council could not, however, make recommendations covering in detail all the forms of recreation currently pursued on public land. These include activities such as bushwalking, rock-climbing, orienteering, canoeing, fishing, hunting, fossicking, picnicking, horse-riding, boating, trail-bike riding, and pleasure driving. Council believes that activities such as these can be accommodated, without detriment to other values, somewhere on public land. Consequently, Council points out that outdoor recreation in general is an acceptable primary or secondary use of much public land (except reference areas and some water storages and their buffers) and has left the details of recreational use to the land managers.

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. With increasing intensity, conflicts and problems can arise. There is always the problem 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 irreversible damage or significant conflict with the primary purposes of the area, while at the same time avoiding unnecessary restrictions on usage. Special care will be required in the location and management of areas zoned for intensive recreation, to prevent environmental damage. Thus, more stringent restrictions can be expected in areas where the vegetation and soils are sensitive to damage (such as those occurring on granite soils), where water quality may be affected, and where the natural environment or special natural features are being preserved.

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

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 area use conventional two-wheel-drive vehicles and keep to the major through routes. 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. The roads are frequently rough and sometimes 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 an 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.

If the increased recreational use of roads is to be catered for, adequate funding should be provided for road maintenance, otherwise deterioration leading to erosion is inevitable.

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*.)

The demand exists for the provision of some areas of public land to accommodate and relocate the off-road activities of motor vehicles, particularly trail-bikes. Such areas could, for example, take the form of defined trails in some hardwood or softwood forests or could include disused quarries or parts of some recreation reserves close to urban centres. Where possible, the alternative use of suitable private land should be considered. Areas chosen, whether public land or freehold, would have to be in situations where damage to soil and vegetation would be minimal, and where noise would not cause undue disturbance to other people using, or living in, nearby areas. Council points out that there is a serious and growing problem of damage to soils and vegetation by spectators attracted to these activities.

Youth camps

Currently the study area contains few permanent youth camp sites. Demand is likely to increase, however, for sites for use by scouts, schools, church groups, and the like. 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 and general camping.

Camps on public land vary greatly—in the purpose for which they are constructed, in their standards 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 limited 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 greater use of existing 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.

It is likely that, in some cases, the land management authority may need to phase out or relocate existing camps if these conflict with the primary use of the surrounding land, or if they are in particularly hazardous areas from the point of view of pollution, erosion, or wildfire.

Fossicking or prospecting

Fossicking, or prospecting (prospecting as defined by the *Mines Act* 1958 means operations conducted in the course of exploring for gold or minerals), is a popular recreational activity in parts of the study area. Most people are seeking gold, but there is also an interest in gemstones.

It is necessary to obtain a Miner's Right before prospecting for gold or other minerals (including gemstones) can be undertaken on public land.

Guidelines and recommendations relating to fossicking and prospecting are given in Chapter R (Mineral and Stone Production).

Recommendations

Recreation

- O1 That public land continue to be available for a wide range of recreational uses where these can be accommodated without detriment to other values and that land management authorities 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.

Motorized recreation

- O2 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 erodible soils, seasonal conditions, excessive maintenance, or conflict with the primary use of the area.
- O3 That the land management authorities endeavour to provide some areas for off-road vehicular use within land under their control.

Recreation reserves

- O4-O5 That the areas described below and shown in the map be used for organized sports (football, horse-racing, golf, etc.) and informal recreation (picnicking, camping, etc.) as permitted by the managing authority

that native trees be conserved where possible

and that these areas be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and, unless otherwise stated, be managed by the Department of Crown Lands and Survey.

- O4 Existing recreational reserves.

Notes:

1. The Natimuk Golf Course may remain under the current tenure and management.
 2. Where possible, native trees should be conserved—in the eastern part of the Racecourse and Recreation Reserve, north of the Wimmera Highway, in the township of Apsley; in the wetland encircled by the Coleraine racecourse; and in the bushland south of the racecourse in the old Edenhope Common.
- O5 200 ha, being allotment 59 of section 27, Parish of Hamilton North (excluding the existing recreation reserve—Pedrina Park, which is covered by Recommendation O4 above, and the water supply basins, Recommendation E44), should be reserved for the establishment of the Hamilton Community Parkland.

P. SCENIC RESERVES

These are set aside to preserve scenic features and lookouts of particular significance

Aims of management of these areas should be to maintain the character and quality of the landscape, to maintain the native vegetation, and where necessary to protect water quality.

Recommendations

P1-P6 That the areas shown on the map and described below be used to preserve scenic features

and that they be permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* and, except where otherwise stated (P3), be managed by the Department of Crown Lands and Survey.

P1 20 ha (Mount Talbot), being the Public Purposes Reserve east of allotment 75, Parish of Connangorach.

Note:

The cup hare's-foot fern (*Davallia pyxidata*)—in Victoria—has been recorded only here and in the sandstone cliffs of the western Grampians. A variety of other plant species have been recorded in this area, and particular attention should be given to the protection of the floral and faunal values.

P2 418 ha, being the public land in the eastern Black Range, includes four areas:

- * allotment 43A, Parish of Mokepilly—this area includes the rock shelter known as Bunjil's Cave
- * allotment 53B, Parish of Mokepilly, being the Recreation and Water Supply Reserve
- * allotments 69 and 70, Parish of Mokepilly
- * allotments B29, B30 and B31, Parish of Lexington

Note:

Limited quantities of sand may be extracted from this reserve with the approval of, and from areas designated by, the land managing authority.

P3 1350 ha, being the public land in the Dundas Range, Parishes of Gatum Gatum, Gringegalgona, and Urangara (three areas).

To be managed by the Forests Commission.

Notes:

1. Widespread, shallow stripping for road-surfacing material has taken place on both private and public land on the outwash slopes of this Range. Further extraction from public land would involve moving into steeper forested country—resulting in an increase in the regeneration and erosion problems and a reduction in the scenic qualities of the Range. Stone production should therefore not be permitted.

2. Approximately 15 ha in the northern extremity of this reserve is licensed to the Coleraine Field and Game Association; this licence could continue, subject to the requirements of the management authority.

3. The fire lookout and communication installation on Mount Dundas—and a minimal area around them—should continue to be managed by the relevant authorities and access to them permitted.

4. The major tree species of the Range are brown stringybark and manna gum, with river red gum and swamp gum on the outwash slopes and flats. The wide range of understorey species, amounting to more than 200 native plants, recorded here includes bedstraw (*Galium binifolium*), which is otherwise only known in East Gippsland and New South Wales; annual fern (*Anogramma leptophylla*), which, although relatively widespread throughout Victoria, occurs only in small numbers at any one location; and the groundsel (*Senecio hypoleucus*) which is restricted to sandstone hills in western Victoria. The varied habitats support a moderately extensive population of native fauna—including about 70 bird species.

P4 6 ha, being the area (Giant Rock) north of allotment 10A, section 14, Parish of Brit Brit.

Note:

This feature is the remnant of a Tertiary volcanic plug. Public land surrounding the rock is cleared and requires revegetation.

P5 8 ha north of allotment 4A, Parish of Bochara, being the area south of the Wannon River and including the Nigeretta Falls.

P6 65 ha south of and abutting the Glenelg Highway at Wannon, Parishes of Bochara and Redruth; including the Wannon Falls and public land on both sides of the Wannon River. This area adjoins a major tourist route. Facilities for picnicking and resting—away from the highway environment—may be developed here, as for areas recommended as Highway Parks.

Note:

Both P5 and P6 include parts of the Wannon River valley, which contains representatives of the native plants of the Dundas Tablelands, where public land is now of very limited extent. The management authority should protect the native flora and the streamside environs of these areas.

Q. AGRICULTURE

The Council recommends that, at this stage, no additional large areas of public land be developed for agriculture and that only small areas of suitable land be made available.

Grazing on public land

Licensed grazing on public land is practised throughout the study area, both as forest grazing and grazing on public land water frontages (see Chapter K). The availability of this public land is not of great significance in the economy of the grazing industry in the region. It is, however, of considerable importance to the individual licensees, for whom the forest grazing often forms an integral part of their enterprise.

Situations also arise where graziers who do not normally depend on forest grazing do require additional areas to provide short-term feed for livestock. These situations include drought, fire, and flooding. Council believes that areas of public land could be available to meet such emergency situations, and that such grazing could be controlled by the issue of agistment rights commensurate with the management goals of the particular areas of public land.

The Council believes that, for the areas available for grazing, an important management goal must be to maintain the vegetative cover and, where the cover is inadequate, to ensure its recovery.

Forest grazing is presently controlled by the land management authority responsible for each particular area, and Council believes that there could be a greater degree of co-ordination between the land management authorities and the formulation of a common policy in the selection and management of areas on which grazing will be permitted.

Apiculture

The variety of suitable flowering plant species, the long flowering period, and the favourable climate make the study area one of the most important in the State for the apicultural industry. The woodlands and forests of the area provide an important source of high-quality honey.

Honey production presents few conflicts with other land uses or management practices, although fire and intensive timber harvesting can reduce the honey yield. Council endorses the Forests Commission's policies of preserving yellow box trees for apicultural purposes to the fullest extent practicable, and of integrating harvesting activities with use by apiarists.

Council considers that apiary sites should continue to be permitted on public land other than in reference areas.

Recommendations

Q1-Q2 That the areas of land listed below, and shown on the map, be used for agricultural research purposes

and that they remain or become (as the case may be) permanently reserved under section 4 of the *Crown Land (Reserves) Act 1978* for this purpose, and be managed by the Department of Agriculture.

Q1 Sir William McDonald Regional Veterinary Laboratory (9 ha)

Q2 Buckley Swamp Pastoral Research Institute (1215 ha)

Q3-Q7 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 rather than be developed as new units. With reference to section 5 (3) of the *Land Conservation Act* 1970, the Council recommends that the land described below be made available for agriculture in accordance with the provisions of the *Land Act* 1958.

Q3 1 ha north-west of allotment 14, Parish of Morea.

Q4 3 ha south of allotment 4, Parish of Dopewora.

Q5 3 ha north-east of allotment 64B, Parish of Murrandarra.

Q6 1 ha, being part of allotment 6A3, Parish of Boroka.

Q7 1.5 ha adjoining allotments 1 and 2, section 1, Parish of Yulecart.

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 exploitable, and other minerals that are not used at present may become important.

Exploration for gold and minerals

The government has the responsibility to establish the existence and extent of the State's mineral resources. The government, in the main, meets this responsibility through the provisions in the *Mines Act* 1958 that provide the tenure under which private enterprise is encouraged at its own cost to locate new deposits of gold or minerals. When a new deposit is discovered in an area where mining is not a currently approved land use, it may be of such importance that a change of the land use is required in the State 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 the particular mineral deposit. It is important therefore that the reservation of conservation areas should not automatically exclude exploration for mineral or fossil fuel resources. Attention should be directed towards ensuring that other values and interests are protected, rather than preventing exploration activities.

The protection of other values—particularly those historical values around old mine sites—should never be enforced to the point that places human life at risk. In relation to public safety, nothing in the recommendations shall affect the powers of Inspectors under the *Mines Act* 1958 and the *Extractive Industries Act* 1966.

Gold

Since 1977, sharp rises in the price of gold have resulted in a significant upturn in exploration activity. The interest of individual prospectors has also increased, as seen by the increased number of claims being registered. A number of attempts are being made to re-open previously uneconomic mines on existing leases.

The substantial rise in the gold price has also stimulated a renewed interest in general prospecting (fossicking), evidenced by the increased number of Miner's Rights issued.

This increased interest in prospecting and mining has not been confined to the large-scale operations being planned and undertaken by the corporate sector. Many individual miners and prospectors are operating in the State—some professionally (that is, they rely on these activities for their sole source of income), some on a part-time, semi-professional basis, but many as a form of recreation encouraged by the possibility of 'striking it rich'. In terms of the number of people involved, this latter group has experienced the most substantial growth, especially since the increased use of the metal-detector.

Fossicking and prospecting

Fossicking and prospecting are often taken to mean one and the same thing. In mining terms, a fossicker is a person who casually works over old mine workings and waste rock heaps in the hope of finding small amounts of gold and minerals. Unlike prospecting, the term 'fossicking' has no basis in legislation under the *Mines Act 1958*. Fossicking is also accepted as a wider term that embraces the search not only for gold and minerals, but also for other items such as bottles or coins.

Prospecting is a systematic activity, defined in the *Mines Act 1958* as 'all operations conducted in the course of exploring for gold and minerals' (including gemstones). It is necessary to hold either an exploration or search licence, or a Miner's Right, before prospecting may be undertaken. Most individual miners and prospectors operate under a Miner's Right, which does not permit prospecting on private land.

Under current legislation there is a small percentage of public land in the State where prospecting under a Miner's Right is not permitted. This includes areas used for various community purposes such as golf courses, cemeteries, and flora reserves.

Council considers fossicking and prospecting to be legitimate uses of public land and as such should not be unduly restricted or regulated. There are some areas, however, where these activities may not be permitted or may require limitation and these have been specifically nominated in the recommendations (see Chapters C and E—Reference Areas and Water Production).

In addition to these, there may be other limited areas of land surface that, because of their special public importance or inherent instability, warrant either permanent or temporary exclusion from fossicking and prospecting. These areas may include, for example:

- * land that, if disturbed, may detrimentally affect water quality, especially where the water is used for domestic consumption
- * important habitats for plant species or fauna
- * important historical relics that could be damaged
- * important geological formations
- * sites of high erosion hazard
- * community assets such as recreation areas and water or sewerage installations.

These limited areas of land surface have not been specified in the recommendations, but will be determined by the management authority and the Department of Minerals and Energy together. Fossicking and prospecting, where they involve minimal disturbance to soil or vegetation, will be permitted on public land other than these limited areas and those specifically nominated in the recommendations. Areas currently exempted or excepted under existing legislation should remain so, unless otherwise specified in these recommendations or unless the land manager and the Department of Minerals and Energy together determine that such exemptions or exceptions should no longer apply.

With the exception of the land referred to in the chapter on Water Production (Recommendations E1–E46), the areas specifically excluded in these recommendations amount to about 1% of the public land in the study area, and are recommended as reference areas. These areas are set aside to maintain natural ecosystems as a standard that may be used by those concerned with studying the land for particular comparative purposes. Within these areas all human interference, including fossicking and prospecting as well as all other forms of productive or recreational use, is prohibited.

Stone

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 requirements of the shires and municipalities with regard to their needs for 'stone' production have been determined by a process of consultation, investigation, and exploration involving the shires, the Department of Minerals and Energy, and this Council.

In determining the areas recommended for the extraction of 'stone', the Council considered the following factors.

Because much of the readily accessible material has been taken in the past by shallow stripping, it will become increasingly necessary to have quarry or deep pit operations. Only limited quantities of material remain to be won by surface stripping. More recently, in areas of Tertiary alluvial gravels, it has been appreciated that below the hard conglomerate cap encountered when shallow stripping, gravels occur that are suitable for many municipal road maintenance and construction purposes. Council believes that these deeper deposits should be exploited on a planned basis and, where necessary, serve a number of shires that do not have adequate resources within their own shire boundaries.

The Council is concerned by the complexity of legislation and procedures governing extraction of 'stone'. (For example, the Country Roads Board and municipal councils are not bound by many provisions of the *Extractive Industries Act 1966*.) A substantial number of unwise excavations have been made upon public land, and in many instances, particularly with the older excavation sites, the rehabilitation of excavated land is lagging. There is need for:

- * review of existing legislation and procedures to enable more rational use of the 'stone' resource of the State
- * provision of adequate resources for the reclamation of old extraction sites on public land

Poorly planned and located excavations can affect 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.

Principles and guidelines

The terms 'exploration and extraction', referred to below, do not relate to the forms of these activities described above under fossicking and prospecting.

The Council believes that the principles and guidelines outlined below should be followed.

1. There are areas of land surface that, because of their inherent instability or special public significance (for example, community assets or areas with important scenic, archaeological, historical, recreation, or nature conservation values), warrant permanent or temporary exclusion from exploration and/or extraction of 'gold', 'mineral', and 'petroleum'. The Department of Minerals and Energy and the managing authority should together determine these areas. An inter-departmental committee convened by the Department of Minerals and Energy is currently establishing the procedures to be followed by the Departments involved.

2. When tenure is issued for operations under the *Mines Act* 1958 on public land, the managing authority should be consulted regarding the conditions to apply and the supervision should be in accordance with the agreed conditions as specified in the claim, licence, or lease and with the requirements of the *Act*.
3. Consultation should continue 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.

4. A system should be established that would ensure, before work commences, the availability of funds for progressive and final reclamation of any excavation or operation. Provision should also be made to enable the acceleration of the rehabilitation of all existing extraction areas on public land.
5. 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.
6. The following guidelines should apply to all extraction from public land.
 - (a) The Department of Minerals and Energy should not issue leases for mining of 'gold', 'mineral', or 'petroleum' unless satisfied with the program—submitted by the applicant. In the case of Miner's Right claims, prior assessment is impractical and the Department should require the lodgment of a bond as surety for adequate rehabilitation. Wherever practical, the Department should seek the lodgment of mining plans that show the expected post-mining state of the land and should state operating conditions to achieve an appropriate standard of rehabilitation acceptable to the land manager.
 - (b) 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'.
 - (c) Extraction of 'stone' should generally be concentrated on the fewest possible sites in an area, and any one site should be substantially worked out and where possible 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 the 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 granite sand occurring as shallow deposits in the weathered profile should be discouraged unless 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.
 - (d) 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 erosion of the bed or banks, or undue pollution of the stream. All applications for the removal

of stone from a stream-bed are submitted to the Department of Crown Lands and Survey. Before approving the application, the Department seeks agreement with the Soil Conservation Authority and the State Rivers and Water Supply Commission regarding particular measures that must be taken to prevent erosion, stream pollution, or permanent damage to the stream environment. It is also necessary that scenic and recreational values of the stream and adjacent frontages be considered.

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.

- (e) 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, allowing a quarry to fill 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 the exploration or extraction operations for 'gold', 'minerals', 'petroleum', or 'stone', where the subject land is within a proclaimed water supply catchment.

Recommendations

- R1** That fossicking and prospecting under Miner's Right, involving minimal disturbance of soil or vegetation, be permitted on public land other than:
- (i) those areas specifically excluded in the recommendations (see the chapters on Reference Areas and Water Production)
 - (ii) those areas that the management authority and the Department of Minerals and Energy together may determine (see the guidelines in the section on fossicking and prospecting)
 - (iii) the areas referred to in R2 below.

Note:

The Council is aware that some changes to existing legislation will probably be necessary to give effect to this and the following recommendation.

- R2** That those areas of public land currently exempted or excepted from occupation for mining purposes under a Miner's Right, or from being leased under a mining lease, remain so excepted or exempted unless the land manager and the Department of Minerals and Energy together determine that such exemption or exception should no longer apply.
- R3** That public land in the study area (other than reference areas) continue to be available for exploration under licence and for extraction of 'gold', 'minerals', and 'petroleum', subject to Recommendation R2 and the principles and guidelines set out above.

Note:

This recommendation does not refer to exploration under a Miner's Right, which is covered by Recommendation R1.

- R4 That public land in the study area (other than reference areas) continue to be available for exploration for 'stone' subject to the principles and guidelines set out above.
- R5-R23 That the areas listed below and shown on the map be used for the extraction of 'stone' in accordance with the principles and guidelines outlined above and, if not already reserved for this purpose, be temporarily reserved under section 4 of the *Crown Land (Reserves) Act 1978* and be managed by the Department of Crown Lands and Survey. (These areas are additional to sites on larger blocks of public land that have gravel extraction as one of the recommended uses.)
- Portions of some of these areas are currently used for extraction of stone under an Extractive Industries Lease and those portions would not be reserved under section 4 of the *Crown Land Reserves Act 1978*.
- R5 8 ha west of allotment 53, Parish of Boikerbert. Use of the area by the Apsley Gun Club may continue.
- R6 10 ha, being the Gravel Reserve north of allotment 53A, Parish of Goroke.
- R7 225 ha in the south-east of allotment 16 and the north-east of allotment 28, Parish of Jilpanger.
- R8 2 ha, being the Gravel Reserve west of allotment 120, Parish of Darragan.
- R9 13 ha, being the Gravel Reserve west of allotment 249, Parish of Illawarra.
- R10 7.7 ha, being the Gravel Reserve south-west of allotment 252, Parish of Illawarra.
- R11 1.6 ha, being the Gravel Reserve west of allotment 11B, Parish of Boroka.
- R12 13 ha east of allotment 4, Parish of Boroka.

Notes:

1. This reserve does not include the area recommended for alienation (see Recommendation Q6).
2. Considerable quantities of soil have been removed from this area, with little or no supervision or rehabilitation of the land surface. Greater control should be exercised on the location and extent of soil-removal activities. Excavation sites must be kept to a minimal area and rehabilitation must progress with the completion of each site.
3. Control of illegal soil removal may include the erection of a fence.
4. Excavation works should be excluded from the road reserve forming the western edge of this reserve, and from a buffer of at least 20 m width along the eastern margin (in the reserve). Native vegetation should be retained and planted where necessary on these buffers.

- R13 0.5 ha, being the Gravel Reserve south of allotment 71, Parish of Illawarra.
- R14 8 ha, being the Gravel Reserve, allotment 87A, Parish of Mokepilly.
- R15 28 ha west of allotment 23, section 15A, Parish of Ararat.
- R16 13 ha, being the temporary Gravel Reserve west of allotment 25, section 9, Parish of Ararat. A screen of native vegetation should be retained along the northern and eastern boundaries.

- R17** 24 ha east of allotments 36 and 43, Parish of Jallukar, incorporating the gravel pits both north and south of the road.
- R18** 49 ha west of allotment 50r, Parish of Moyston, and including the existing gravel pits. When gravel extraction is completed, each pit may be used as a garbage depot (see Recommendation S8).
- R19** 2 ha, being the Gravel Reserve adjacent to allotment 8 of section 3, Parish of Burrumbeep.
- R20** 15 ha, being the two reserves south of allotment 1, Parish of Merrymbuela.
- R21** 15.6 ha, being the Quarry Reserve, allotment 92, Parish of Dunkeld.
- R22** 3 ha, being the Sand Reserve west of allotment 5 of section 2, Parish of Yatchaw West.
- R23** 5 ha, being the Stone Reserve west of allotment 6, Parish of Eumeralla.
- R24** That the areas currently reserved for 'stone' production that are not listed under Recommendations R5–R23 or recommended for some other use remain as currently reserved. In the future, consideration could be given to using these areas if the need to do so can be established. (At the scale of mapping used, it has not been possible to show all these areas.)

Notes:

1. In relation to public safety, nothing in the recommendations affects the powers of Inspectors under the *Mines Act 1958* and *Extractive Industries Act 1966*. It is understood that these powers would be exercised in consultation with the management authority.
2. Sand is currently being extracted from the bed of Bryan (Koroite) Creek at Coleraine. This operation may continue subject to the principles and guidelines set out above.

S. UTILITIES AND SURVEY

Many utilities occupy public land. They include roads, pipelines, power lines, power stations, hospitals, churches, cemeteries, public halls, shire offices and depots, garbage depots, 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.

In the absence of firm planning proposals, accompanied by the necessary detailed information, it is not possible for the Council to provide for future requirements of land for survey and utilities. The use of land for these purposes will be considered when the need arises.

Government agencies concerned with provision and installation of communications equipment, transmission lines, pumped storage sites, power stations, port facilities, pipelines, roads, etc. are requested to submit proposals involving occupation agreements or the setting aside of sites on public land to the appropriate land managers at an early planning stage. This would assist in achieving co-ordinated planning, and perhaps avoid the necessity for costly resurveys.

Recommendations

General utilities

- S1 That existing easements continue to be used to provide access and services.
- S2 That new power lines, pipelines, communications facilities, 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 management authority, and that new pipelines and power lines follow existing easements if possible (this may require widening of some easements).

Garbage and sanitary depots

Council considers that sites on public land used for the disposal of garbage and sanitary material should be located so as to cause minimal conflict with conservation values. It therefore suggests that shires, together with the land managers, investigate future sites for waste disposal in areas set aside for hardwood production as uncommitted Crown land, or in worked-out gravel pits. Particular care should be taken to avoid contamination of groundwater resources.

Facilities on public land should be shared by municipalities wherever practicable to minimize the number of sites required. At the same time, it is appreciated that locating sites reasonably close to users minimizes transport costs and the illegal dumping of rubbish. Areas used on a temporary basis (such as garbage depots and sanitary depots) should be fully rehabilitated at the operator's expense.

Within areas used as garbage depots, disposal of waste should be confined to small sections of the site at any one time, and there should be tighter supervision to ensure that garbage is dumped only in the designated areas.

- S3 That in areas recommended as uncommitted land and for hardwood production, and unless covered by some other recommendation, existing—licensed—waste-disposal depots may continue to operate.

- S4 That the waste-disposal depots—being allotment 1F, and the area west of allotment 3A, Parish of Murrandarrh (both being included in the recommended Bushland Reserve I13) and totalling 14 ha—may continue to operate.
- S5 That the garbage depot west of allotment 107, Parish of Toolongrook, may continue to operate within the current licensed area.
- S6 That 3 ha south of allotment 100, Parish of Toolondo, continue to be used as a garbage depot.
- S7 That the garbage depot south of allotment 4A, Parish of Warung, may continue to operate within the current licensed area.
- S8 The waste disposal may follow gravel extraction on land recommended as a stone production area (Recommendation R18) west of allotment 50J, Parish of Moyston.

Railway lines

- S9 That, where isolated remnants of the original vegetation remain on land associated with railways, every effort be made to protect that vegetation consistent with management practices.

Note:

From studies undertaken in the Hamilton region, two sections of the Hamilton–Ararat railway—within the study area—have been identified as containing samples of basalt plains vegetation, little of which remains on public land. Near Strathkellar, some 50 plant species have been identified, including blown-grass, pale flax-lily, and long-hair plume-grass in a predominantly kangaroo grass area. Similarly, near Moutajup, some 50 plant species have been identified with the kangaroo grass; including silver banksia, swamp isotome, feather-heads and a large area of billy buttons.

Disused railways and railway land often carry significant remnants of native vegetation, contain buildings of historical importance, or may be suitable for roadways or for cycling or walking tracks. Accordingly, the potential of this land for uses such as these should be carefully examined before arrangements are made for its disposal.

- S10 That the potential of disused railway land to be used for other government needs be assessed and taken into account when arrangements for the disposal of this land are being considered.

Notes:

1. The disused railways between Hamilton and Natimuk and between Hamilton and Coleraine pass through a region of the State in which public land is very limited in extent and in which the deterioration of tree cover is causing considerable concern.

The portions of railway easements—and especially the areas around sidings—that are public land should remain as such for the present. Where possible, native vegetation should be re-established on these areas to complement the revegetation schemes referred to under Recommendation W2.

2. From studies undertaken in the Hamilton region, three sections of disused railway have been identified as containing relatively intact remnants of the original vegetation:

* Near Kanawalla—on the old Balmoral line—some 70 plant species have been identified in the grasslands, including pale vanilla-lily, slender speedwell, and a number of heath species (such as smooth parrot-pea and cranberry heath).

- * Approximately 3 km west of Hamilton on the old Coleraine line, an area with both kangaroo grass and tussock grass (in damper areas) includes plains species such as red parrot-pea and woolly New Holland daisy.
- * Near Wannon, a section of the old Coleraine line contains heath vegetation typical of the region, but also two species not found elsewhere in this section of Wannon River valley: common fringe-myrtle and porcupine grass.

Trigonometrical stations

The Council recognizes the necessity to reserve sites for new trigonometrical stations in the future.

- S11 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 stations and provide lines of sight.

Other utility areas

- S12 That existing legal use and tenure continue for areas that are at present reserved and used for utility purposes such as airports, public buildings, municipal depots, cemeteries, schools, etc.

Navigation aids and communications installations

- S13 That the minimum area necessary for access to and maintenance of navigation aids and communications installations be temporarily reserved on public land where it would otherwise remain as unreserved Crown land; and, where other forms of public land tenure apply, that the government utility involved have the right to occupy a minimum area and provide lines of sight.

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 some cases, however, Council has made a specific recommendation for township land to be set aside as a Bushland Reserve, as a Flora Reserve, or to be used for water production; these recommendations are included in the appropriate sections. Other areas of public land in townships should remain as unreserved Crown land—to be used, if required, for township purposes in the future.

Recommendation

T1 That public land in townships, other than those areas that have been specifically reserved, should remain as unreserved Crown land to meet future requirements.

Note:

At the mapping scale used (1:250 000), it is generally not possible to define accurately the boundaries of public land in townships. Reference should be made to the appropriate township plan to determine the accurate boundaries and form of reservation for those townships where public land is not shown on the map or referred to in these recommendations.

U. UNCOMMITTED LAND

In planning for balanced land use, known resources are allocated 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 re-allocated 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 areas of public land remain uncommitted to any primary use at this stage.

Land classed as uncommitted includes:

- * areas that, although not needed to satisfy any known demand, are retained to meet future demands as yet undefined
- * land known to have a high capability to satisfy one or more particular demand, but not at present committed to any one use, as foreseeable requirements can readily be met from other areas
- * areas on which further study is required to determine the capability of the land 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 present needs, provided this does not cause changes that would be difficult to reverse.

Although many areas of public land on the south-western Wimmera plains are categorized as uncommitted in the recommendations, these areas contribute greatly to the regional landscape and contain many valuable wetlands. Their greatest value, however, is that their low forests and scrub are preventing wind erosion of the sand sheets and dunes. It is important that these areas are retained as public land.

Recommendations

U1 That the land indicated on the map be used to:

- (a) maintain the capability of the land to meet future demands
- (b) produce those goods and services required by the community (such as forest produce, grazing, honey, and gravel) that can be supplied without seriously reducing the long-term ability of the land to meet future demands

that

- (c) the special features and values listed below be protected

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

Special features

1. Of particular note is the value of all the forested areas throughout the south-western Wimmera plains for the conservation of the habitat of the Victorian sub-species of the red-tailed black cockatoo.
2. Wetlands throughout the Awonga, Yallakar, and White Lake areas, and north of the Flora and Fauna Reserve H13, are valuable for wildlife conservation.
3. The area lying north of Lake Lonsdale (Recommendation E5) also abuts the Western Highway, and contains a scenically attractive, mature forest of river red gum, yellow gum, yellow box, and long-leaf box. This combination of an area of mature woodland with a large lake offers opportunities for recreation, education, and nature study close to the town of Stawell.

The woodlands are important for honey production; such forests in this region have been found to be important habitat for the squirrel glider, and this particular area is remote from forests of similar value.

4. The two areas of woodland adjacent to Lake Fyans (Recommendation E7) add diversity to the landscape of the area and provide opportunities for passive recreation. They are also important for honey production, and the area to the south contains several species of orchid that are becoming rare throughout the State.

V. MILITARY TRAINING

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, 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 management authority, and other relevant bodies such as the Soil Conservation Authority
- (b) the training activities be carried out under conditions specified by the management 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, and, except under special circumstances, from parks and other areas of recreation and conservation significance.

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, public utilities, 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 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 use and tenure continue

and that

where the land is not reserved 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 be managed as if they were uncommitted land.

Revegetation of areas

The deterioration of tree cover in some of the rural areas of the State is causing increasing and widespread concern. Clearing—to establish pasture and crop lands—has been the initial cause of this deterioration and continues in some areas. The gradual decline, and ultimate death, of the remaining trees, however, is emerging as the major problem.

Soil compaction by stock, exploitation for timber, attacks by insects, parasites, and other pathogens, exposure to winds, salting of the soil, erosion, and natural senescence among aging trees are all possible causes of the decline. The prevention of natural regeneration by grazing or other practices is exacerbating the problem.

Increasing soil salinity resulting in the degradation of grazing and crop country, loss of shelter for stock and for wildlife, and diminished aesthetic value are all consequences of this decline, which, although difficult to express in monetary terms, results in economic loss.

Throughout the study area, a large number of small parcels of public land carry little or no natural vegetation. In many cases they have been reserved for specific purposes, although not used for them, and have been continuously licensed to the adjoining landholders; over a period of time they have been cleared and integrated with the surrounding farmlands. In other cases the reserves can still be recognized by the native vegetation, but, for a number of reasons, the tree cover has declined.

A recent amendment to the *Forests Act* 1958 has introduced a tree-growing assistance scheme to encourage tree-planting and tree-fostering projects—where these are in the community interest.

To complement this scheme, in areas where tree decline and salting are becoming a problem and in areas where native trees are greatly reduced in number, Council recommends that some of the small areas of public land be used as pilot schemes or nuclei for the re-establishment of tree species native to the area.

Following successful revegetation, some of these areas could serve as examples to the rural community of the effectiveness of such revegetation schemes, and consideration could be given to reserving them for various public uses.

Recommendation

W2 That the areas indicated on the map and described in the schedule below be used to foster the re-establishment of tree species native to the area that

when revegetation is completed, consideration be given to reserving them for various public uses

and that they be managed by the Department of Crown Lands and Survey.

1. 5 ha, being the former Water Reserve on Darragan Creek lying between allotments 57 and 57A, Parish of Darragan.
2. 3 ha, being allotment 13A, Parish of Nurrabiel.
3. 16 ha, being allotment 40, Parish of Wonwondah.
4. 5 ha north of allotment 28, Parish of Mockinya.
5. 2 ha, being the former Water Reserve on Salt Creek south of allotment 26A, Parish of Kout Narin.
6. 8 ha, being the Gravel Reserve west of allotment 42, Parish of Kout Narin.
7. 9 ha adjacent to allotments 48 and 49, Parish of Muryrtym.
8. 8 ha, being allotment 39C, Parish of Mooree.
9. 5 ha, being allotment 14, section 2, Parish of Jallukar.
10. 5 ha adjacent to allotment 78B, Parish of Wookurkook.
11. 12 ha, being allotment 80B, Parish of Wookurkook.
12. 73 ha, being allotment 6, section 17, Parish of Beerik.
13. 6 ha north of allotment 2, section 10, Parish of Toolang.
14. 5 ha adjacent to allotment 48, Parish of Coleraine.
15. 20 ha, being the eastern part of allotment 2, section 20, Parish of North Hamilton (Mount Bainbridge).

(Note: This excludes a minimal area around the communications installations.)

16. 8 ha, being allotment 79C, Parish of Karabeal.
17. 10 ha adjacent to allotment 62D, Parish of Moutajup.
18. 5 ha, being the Water Reserve, allotment 7c, section 24, Parish of South Hamilton and the adjacent Water Reserve, allotment 7B, section 2, Parish of Yulecart.

19. 10 ha adjacent to allotment 4, section 20, Parish of South Hamilton (Mount Pierrepoint).

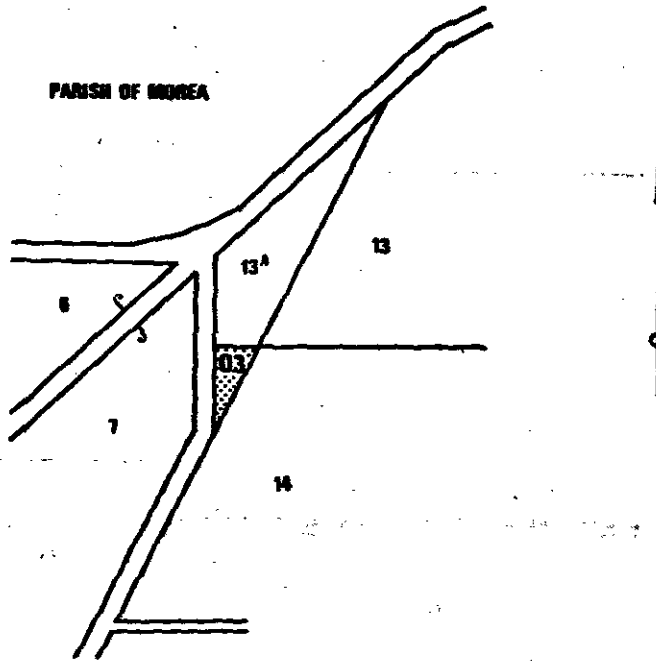
(Note: This excludes a minimal area around the communications installation and the water supply reservoir Recommendation E46.)

20. 9 ha east of allotment 3C, section 12, Parish of Monivae.
21. 3 ha adjacent to allotment 15A, section A1, Parish of Codrington.
22. 10 ha, being allotment 1B, section 12, Parish of Eumeralla.

AGRICULTURE Q3

MAP 1

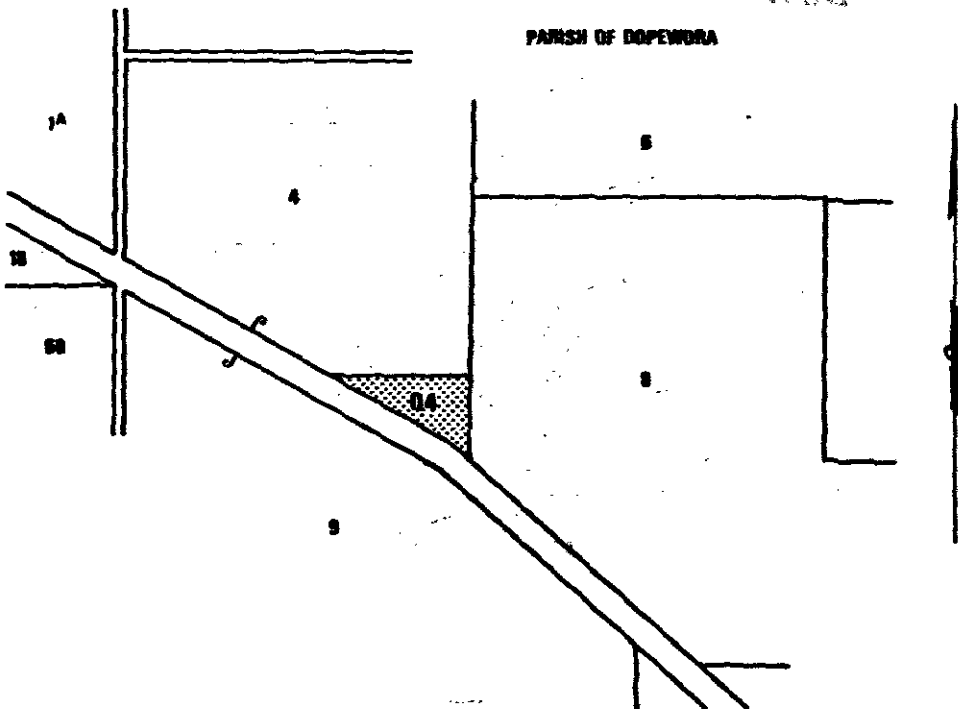
MOREA



AGRICULTURE Q4

MAP 2

DOPEWORA



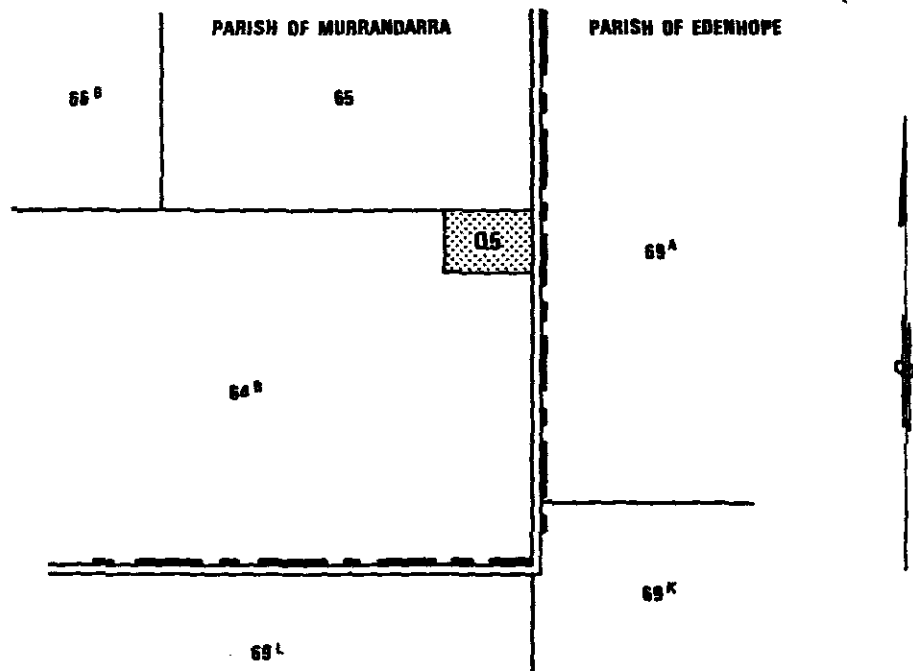
PUBLIC LAND RECOMMENDED FOR ALIENATION



SCALE 1 : 15,000

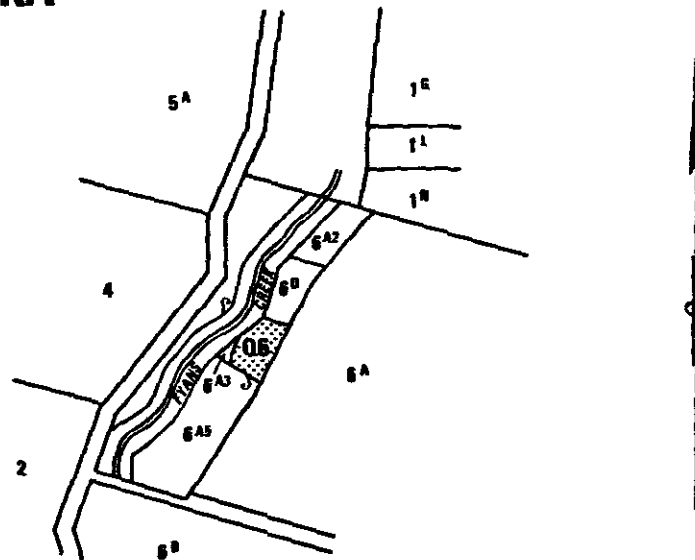
**AGRICULTURE Q5
MURRANDARRA**

MAP 3



**AGRICULTURE Q6
BOROKA**

MAP 4



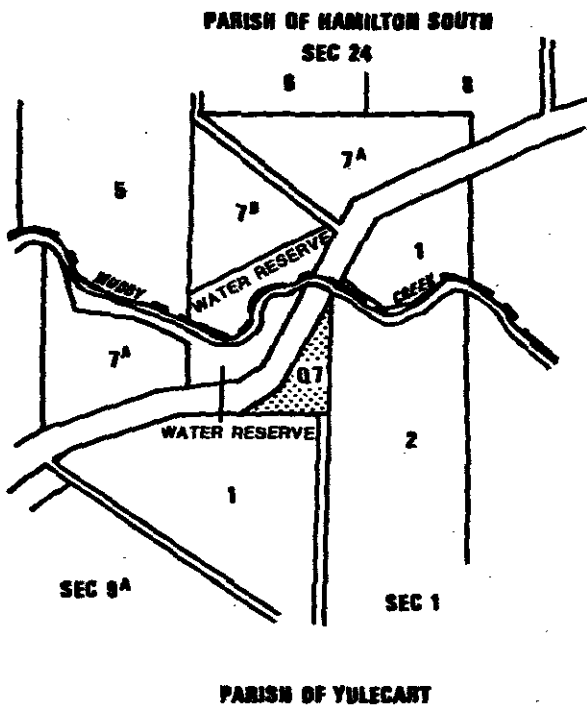
PUBLIC LAND RECOMMENDED FOR ALIENATION



SCALE 1:15,000

AGRICULTURE Q7 YULECART

MAP 5



PUBLIC LAND RECOMMENDED FOR ALIENATION



SCALE 1 : 15,840