

FINAL RECOMMENDATIONS

EAST GIPPSLAND STUDY AREA

**LAND CONSERVATION COUNCIL, VICTORIA
MELBOURNE, MARCH, 1977**

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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 balanced use of land in Victoria. This report contains the Council's final recommendations concerning the public land in the East Gippsland study area. Notices showing the boundary of the study area and advising that an investigation was to be carried out were published in the Victoria *Government Gazette* of March 28 1973, and in local and Victorian newspapers in March and April 1973. A descriptive report was published on August 14 1974. The Council received 456 submissions on the future use of public land. Individuals, associations, companies, and local and State government bodies, representing a wide cross-section of the community, made helpful submissions covering most feasible forms of land use for the area. 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 area, the Council formulated its proposed recommendations, which were published on February 20 1976. The Council subsequently received 328 submissions commenting on the proposed recommendations. After due consideration, the Council now presents its final recommendations.

Layout

This volume contains written recommendations and maps. The recommendations are grouped under major use headings, such as Parks, Timber Production, and so on. Map 1 at a scale of 1 : 250,000 covers the whole study area and gives a broad view of the recommended land uses. Maps 2-6 are detailed plans of particular areas that could not adequately be defined on Map 1 or in the text. The Land Conservation Council holds other maps showing the boundaries of all areas subject to recommendations in greater detail.

Land Uses

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

The Council recommends large tracts for timber production, and the creation of six parks (three national, two State, and one regional). It also recommends the creation of reference areas and education areas (covering the wide range of land types found in the study area) and wildlife reserves for sites containing valuable faunal habitats, as well as other types of reserves for different purposes.

Council is aware that in selecting the land for parks, reference areas, and other reserves it has been necessary to include some areas that have value for timber production. These reserves carry approximately 9 per cent of the total estimated volume of available timber in the East Gippsland study area. A further 4 per cent is on two areas of uncommitted land from which logging is to be excluded until land use has been

reviewed. The remaining 87 per cent is located either in reserved forest or on uncommitted land and is therefore available for use by the timber industry. Following harvesting operations for forest products within these land categories, silvicultural techniques should be applied to ensure that cut-over areas regenerate adequately.

TABLE 1.
RECOMMENDED PUBLIC LAND USE.

Recommended Land Use.	Area.	Percentage of all Land in Study Area.	Percentage of Public Land.
	(ha)		
Parks	139,800	15	17
Reference areas	9,720	1	1
Wildlife, flora and fauna reserves	15,620	2	2
Other recreation and conservation areas	3,530	< 1	< 1
Hardwood production	433,000	47	53
Education areas	1,525	< 1	< 1
Agriculture	8,240	< 1	1
Utilities and survey	710	< 1	< 1
Uncommitted land	203,000	22	25

Where 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 and animals is very imperfect. There must be many places in Victoria where special values 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 seven 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. There is an urgent need to make additional field staff and finance available, and the Council therefore recommends :

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

The Council previously proposed certain additional arrangements for protecting the 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. In *national parks* and *protected public land*, the Commission's fire-prevention works are subject to the agreement of the managing authority or, if agreement is not reached, to determination by the Governor in Council. In *State forests*, which comprise *reserved forest* and *protected forest* as defined in the *Forests Act 1958*, the Forests Commission is also responsible for the control and management of the vegetation. 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*.

The Council expects that, as a result of further study, many more areas with special values will be identified. These recommendations cannot provide for the conservation of these values and the Council therefore recommends :

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

The Council also recognizes that in some cases existing legislation will have to be amended in order to effectively implement the recommendations in this volume. 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 :

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

The Council further recommends :

- V That, as many of them have not been precisely surveyed, the boundaries of the areas referred to in the recommendations be subject to minor modification, road excisions, easements, and other adjustments that may be necessary.
- VI That the recommendations in this publication do not change the status of roads passing through or abutting public land that are at present declared roads under the *Country Roads Act 1958*.
- VII That, where areas of public land are not specifically referred to in these recommendations, present legal uses and tenure continue.

A. PARKS

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

A park is here defined as "an area of land in a natural or semi-natural condition, reserved because of its scenery, floral and faunal content, historical interest, or other features, which is used by the public primarily for open-space recreation and education".

This definition encompasses many different types of parks ; they vary mainly in size and content and in the types and intensity of uses to which they are subjected.

Definitions of different types of parks are needed to clarify the main purpose for which each one is created, and will help planners, managers, and users of parks.

It is necessary to establish the management aims that apply to areas or zones within parks. Among these, the conservation of native flora, fauna, and other natural features would be an essential part of national and State park management. This should include the identification and strict protection of significant ecological systems as well as the development and use of techniques to maintain or enhance special values associated with flora and fauna. 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 types of purpose for which they are to be used. For instance, some of the present national parks are more akin in character to a State or regional park than to the national park of nation-wide significance outlined in the classification.

Road-making materials

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

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 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 flora, fauna, and other natural features. Wilderness zones, which are relatively undisturbed tracts of land used for solitude and wide-ranging forms of recreation, could be designated within a national park.

State park

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

State parks should include samples of each major land type not already represented in national parks, and as in national parks, the conservation of native flora and fauna would be an essential feature of management. Interpretative services would be provided.

Development of facilities would be limited to a very small portion of the park. Activities would largely consist of sightseeing and the observation of 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.

Recommendations

National Parks

A1 Croajingolong National Park

That the area of 82,000 ha shown on Map 1 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

and that

(c) as the park includes Tamboon Inlet and extends to low-water mark in Mallacoota Inlet, any commercial fishing (including oyster-farming) in Tamboon Inlet and between low-water mark and high-water mark in Mallacoota Inlet be subject to any special conditions agreed upon by the National Parks Service in consultation with the Division of Fisheries and Wildlife

- (d) sites of archaeological or historical significance be protected
- (e) car access be permitted to a number of points on the coast, including the Point Hicks area and Wingan Inlet.
- (f) policy with regard to motor boats on Tamboon Inlet be determined by the National Parks Service (after consultation with the Shire of Orbost), which should be the responsible authority under the *Motor Boating Act 1961*
- (g) the National Parks Service should consult with the Fisheries and Wildlife Division concerning wildlife management
- (h) honey production be permitted subject to specified conditions
- (i) grazing be phased out

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

Situated almost half-way between Sydney and Melbourne, this is one of the most important parks in south-eastern Australia, and is of international significance. It contains representative samples, in a relatively undisturbed condition, of many environments that have been substantially altered elsewhere.

The park has considerable value for nature conservation. It incorporates most of the land types of the coastal parts of the study area, with their associated diverse vegetation, fauna, and geological types. It also contains the habitats and known occurrences of numerous rare and interesting plant species, including many at the limit of their range. Several rare animal species occur here, including the smoky mouse, ground parrot, and Australian grayling.

The park is extremely valuable for recreation, as a major proportion of Australia's population lives within a day's travel. It incorporates inlets, extensive ocean beaches, cliff-backed coves, and rocky promontories, all in an unusually undisturbed condition. In addition, several peaks form excellent lookout points, the varied vegetation—of forest, jungle, woodland, and heath, with spectacular displays of wildflowers—is of particular interest, and wildlife is abundant and diverse.

Notes : The park boundary extends to low-water mark and within Mallacoota Inlet includes all islands exposed at low water.

The Ports and Harbors Division controls the waters of Mallacoota Inlet and the Shire of Orbost controls the boating activities on Sydenham Inlet. These bodies should consult with the National Parks Service before undertaking any works or before zoning boating activities on the Inlet where these are likely to affect the recreational and nature conservation values of the park.

Tamboon Inlet has been used for recreation for many years, particularly by the residents of the Cann River area. In addition several small areas of private property adjoin the Inlet. Continued access to the private property by an approved route must be provided and the park zoned to allow people to retain many of the privileges they have enjoyed in the past. This would permit activities that might not normally be permitted in a national park, such as bringing pets into the area.

In the Betka River catchment, all public land required for water storages, diversion works, and associated facilities, together with a buffer strip (when defined by the Soil Conservation Authority in a land use determination), is excluded from the park (see recommendation D3), but should be managed in consultation with the National Parks

Service. Similarly, the National Parks Service should consult with the Soil Conservation Authority before implementing any changes in land use or development works in that section of the park within the catchment.

An area of approximately 75 ha near Point Hicks, excluded from the park, has been recommended to be temporarily reserved for possible development associated with the park. Any such development would be undertaken only after receiving the prior approval of the National Parks Service (see recommendation Q2).

Council would not oppose the upgrading of the existing Aerodrome, Betka, and Stony Peak tracks to provide an alternative access route between Mallacoota and the Princes Highway, nor would it oppose upgrading of the "Old Coast Road" between Bemm River and Cann River townships for tourist use. (Any roadworks within the Betka River water supply catchment will require the prior approval of the Soil Conservation Authority.)

Land has been excluded from the park to provide for the possible expansion of Mallacoota and Tamboon, and for community activities not appropriate in a national park.

The park area currently contains a number of permissive occupancies, which should be phased out by 1990.

The park incorporates the existing Captain James Cook, Wingan Inlet, and Mallacoota National Parks, and adjoins the Nadgee Nature Reserve (in New South Wales).

A2 Tingaringy National Park

That the land (17,000 ha) shown on Map 1 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

and that

low-intensity grazing of cattle be permitted in limited areas—subject to adequate protection of the park, the Kosciusko National Park in New South Wales, and the proposed Gattamurh Creek reference area

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

This park is important for nature conservation. It contains substantial areas of cypress pine and white box open forest and woodland—vegetation associations of very restricted distribution within Victoria. In marked contrast, open forest IV of alpine ash and brown barrel occurs in the east of the park, and white sallee woodland on the highest peaks. Little is known of the fauna. The altitudinal range is approximately 180–1430 m. The park is also valuable for recreation. Its most important recreation features are the Snowy River and Mount Tingaringy, but the whole park is rugged and well suited to bushwalking and similar activities. It adjoins the Kosciusko National Park (in New South Wales) along the Victoria–New South Wales border.

Note : The McKillops Bridge area is within the park, and should be zoned to allow for traditional uses.

A3 Snowy River National Park

That the area of 25,000 ha shown on Map 1 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
- and that
- (c) the managing authority consult with the Fisheries and Wildlife Division concerning wildlife management within the park
 - (d) grazing be phased out

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

This park, essentially comprising part of the Snowy River Valley, has outstanding attributes of scenic grandeur. It provides opportunities for activities that include whitewater canoeing and bushwalking.

Nature conservation values are high. Most vegetation types are of low open forest and woodland, but range from white box woodland and red wattle closed scrub to silvertop and messmate-mountain grey gum open forest III.

A few plant species are endemic to the Snowy River Valley and a number of others are rare. The area is an important habitat for the rare brush-tailed rock-wallaby.

Most of this park was proposed as a wilderness area in Council's Proposed Recommendations. Subsequent to submissions on this proposal—and based on further information regarding the conservation values and the opportunities for recreational development—the Council now believes that it would be more appropriate to reserve portion of the area as a national park. This will enable a wider range of people to enjoy its scenic grandeur and high nature conservation values.

Many submissions have supported Council's understanding of the wilderness experience and its implications when recommending areas of land for this use. Supplement 1 of this report sets out the basic concepts, use, and management associated with wilderness areas. The Council still believes that there should be a wilderness in eastern Victoria and will seek to provide this when making recommendations for other study areas.

The remainder of the area originally proposed as a wilderness area has now been recommended to be uncommitted land with an embargo on logging and roading, other than that required for fire protection, until land use is reviewed by the Council.

This land comprises both the Gelantipy plateau and the Bowen Range. The Gelantipy plateau carries a large unlogged area of alpine ash, which has a national significance comparable with the cool-temperate rainforests situated on the Lamington plateau in Queensland. The plateau links the Snowy River Valley with the Bowen Range, which affords extensive panoramic views of the surrounding landscapes and contains a great range of vegetation and habitat types.

Both areas, but in particular the Gelantipy plateau, carry appreciable quantities of mature and fire-regrowth timber. Although relatively remote and inaccessible, this timber may eventually be important to the industries using the timber resource in the western portion of the study area. Council believes, however, that the forests in the

vicinity of the Rodger River can provide, at least in the short term, sufficient to meet the requirements of the timber industry and considers that the land use options for the Gelantipy plateau and the Bowen Range should be kept open.

Council has closely considered the possible effect of this recommendation on local communities and believes that a low-level crossing of the Snowy River at Mooresford is both technically and economically feasible and would provide alternative access via a route through Buchan to unallocated timber resources east of the Snowy River.

The area to the west of the Snowy River is in the Alpine and Gippsland Lakes Hinterland study areas. That part delineated on Map 1 and indicated by hatching has been recommended for inclusion in the proposed park. This will facilitate planning and management of the whole environs of the Snowy River, in addition to adding features such as colonies of the brush-tailed rock-wallaby, occurrences of mountain ash, "jungle" gullies, several rare or endemic plants, and also attractive limestone formations. The southern part of this additional area presently supports timber production and is a vital source for local industry. Supplies here will be exhausted before 1983 at the current rate of logging. Council considers that logging in this section of the park could continue until that date, under the close supervision of the Forests Commission, provided features of special significance to the park are adequately protected. These include the "jungle" gullies, some examples of undisturbed mountain ash stands, and the scenic quality of the escarpments into the Snowy River.

The Council notes suggestions to build dams on the Snowy and Rodger Rivers for flood mitigation and for irrigation.

State Parks

A4 Coopracambra State Park

That the land (13,000 ha) shown on Map 1 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 features of particular geological significance

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

The main features of this park are the gorge of the Genoa River, with its steep sandstone escarpments, and the undisturbed forest environment. The park contains land types not represented in other Victorian parks. The Upper Devonian sediments are of particular importance as they support diverse vegetation associations, including species not recorded elsewhere in Victoria. They also contain plant fossils and the site where the well-known fossilized footprints were found. Portion of this park adjoins the Nungatta National Park in New South Wales.

A5 Lake Tyers State Park

That the land (2,000 ha) shown on Map 1 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 and that
 - (c) features of historical interest be preserved
 - (d) honey production be permitted subject to specified conditions
- and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Forests Commission.

This park is very valuable for recreation, with forested slopes leading down to the eastern shore of Lake Tyers. The forest is mostly silvertop-stringybark forest, but includes attractive stands of coast grey box (particularly near the Lake) and also wet gullies. Tunnels and caves have formed in the Miocene limestone that outcrops along the shores of Lake Tyers, and bats use some of these for roosting.

Small quantities of forest produce, associated with the development of the park, would be available from time to time.

Regional Park

A6 Mount Raymond Regional Park

That the land (800 ha) shown on the map be used to :

- (a) provide opportunities for informal recreation for large numbers of people
- (b) conserve and protect natural ecosystems to the the extent that this is consistent with (a) above
- (c) provide sites for a fire tower and television translator

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

This park adjoins the Princes Highway about 12 km east of Orbost. Mount Raymond offers panoramic views over Orbost, the Snowy River flats, Lake Curlip, and Marlo. The population of terrestrial orchids is noteworthy, and should be considered when the park is further developed.

B. 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 would normally be typical examples of land types that have been extensively developed elsewhere for productive uses such as agriculture or softwood production. The course and effects of human alteration and utilization of the land can be measured against these relatively stable natural areas. Most developed regions have few areas remaining that are suitable as reference 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 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 reference area from damaging or potentially damaging activities on surrounding land. It will also protect important values in the surrounding land from potentially damaging natural processes occurring on the reference area.

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

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

In recommending the creation of reference areas, the Council foresees the need for new legislation to specify their status. An advisory committee has been established to determine the broad policies for the management of reference areas and their buffers.

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

Recommendations

B1–B14 That the areas listed below and shown on Map 1 :

- (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 ; that the authority currently managing the recommended buffer be responsible for the management of the enclosed reference area ; and that the delineation of buffer zones be by joint agreement between the managing authority and the advisory committee.

B1 Gattamurh Creek (400 ha)

Geology : Lower Devonian granite. Topography : steep slopes. Elevation : 200–650 m. Rainfall : low. Vegetation : white box and white cypress-pine woodland and open forest I and II. Land systems : Jingallala, Wyangil.

To be managed by the National Parks Service.

B2 Gelantipy Plateau (550 ha)

Geology : Middle Devonian volcanics. Topography : plateau. Elevation : 600–1,100 m. Rainfall : high. Vegetation : alpine ash and messmate open forest IV. Land systems : Errinundra and Bullamalk.

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

B4 Mountain Creek (1,400 ha)

Geology : Silurian sedimentary. Topography : steep slopes. Elevation : 200–900 m. Rainfall : moderate. Vegetation : brown barrel open forest IV, messmate-peppermint open forest III, and stringybark-box open forest II. Land system : Bullamalk.

To be managed by the Forests Commission.

B4 Zig Zag Creek (600 ha)

Geology : Ordovician sedimentary. Topography : steep slopes. Elevation : 200–450 m. Rainfall : low. Vegetation : stringybark open forest II and III. Land system : Pinnak.

To be managed by the National Parks Service.

B5 Concordia Gully (760 ha)

Geology : Ordovician sedimentary. Topography : plateau. Elevation : 800–1,100 m. Rainfall : moderate. Vegetation : peppermint-stringybark open forest II and III. Land systems : Cabanandra and Errinundra.

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

B6 Big River (370 ha)

Geology : Upper Devonian granite. Topography : steep slopes. Elevation : 400–1,000 m. Rainfall : high. Vegetation : shining gum, alpine ash, and brown barrel open forest IV. Land system : Wat Wat.

To be managed by the Forests Commission.

B7 Musket Creek (450 ha)

Geology : Ordovician sedimentary. Topography : plateau. Elevation : 840–1,100 m. Rainfall : high. Vegetation : messmate-gum and brown barrel open forest IV, and peppermint-gum open forest III. Land system : Errinundra.

To be managed by the Forests Commission.

B8 Camp Creek (1,000 ha)

Geology : Quaternary sands. Topography : Dunes and swales. Elevation : 10–50 m. Rainfall : moderate. Vegetation : Yertchuk–southern mahogany–brown stringybark woodland I and II, silvertop–white stringybark open forest III, and heath. Land system : Barga.

To be managed by the National Parks Service.

B9 Yambulla (380 ha)

Geology : Devonian sedimentary. Topography : steep slopes. Elevation : 200–850 m. Rainfall : moderate. Vegetation : messmate and silvertop–stringybark open forest III, stringybark–box open forest II, and stringybark woodland I–II. Land system : Koola.

To be managed by the National Parks Service.

B10 Merragunegin (650 ha)

Geology : Ordovician sedimentary. Topography : steep slopes. Elevation : 150–650 m. Rainfall : moderate. Vegetation : messmate and silvertop–stringybark open forest III, and yertchuk–red stringybark woodland I–II. Land system : Weeragua.

To be managed by the National Parks Service.

B11 Jones Creek (430 ha)

Geology : Ordovician sedimentary. Topography : steep slopes. Elevation : 200–450 m. Rainfall : high. Vegetation : brown barrel and messmate open forest IV and lowland closed forest (“jungle”). Land systems : Pinnak and Wurrin.

To be managed by the Forests Commission.

B12 Baawang (670 m)

Geology : Quaternary sands. Topography : dunes and swales. Elevation : 10–70 m. Rainfall : moderate. Vegetation : bare sand, heath, and mahogany–brown stringybark woodland I–II. Land systems : Boole Poole and Barga.

To be managed by the National Parks Service.

B13 Benedore River (1,200 ha)

Geology : Lower Devonian granite and Ordovician and Tertiary sedimentary. Topography : undulating to steep. Elevation : 50–280 m. Rainfall : moderate. Vegetation : red bloodwood–silvertop open forest II–III. Land system : Wooyoot.

To be managed by the National Parks Service.

B14 Seal Creek (1,000 ha)

Geology : Tertiary sedimentary. Topography : undulating. Elevation : 10–80 m. Rainfall : moderate. Vegetation : red bloodwood–silvertop open forest II–III and heath. Land system : Wooyoot.

To be managed by the National Parks Service.

Note : Areas are approximate.

C. WILDLIFE

While some of Australia's animals have adapted to the changes in the environment brought by European Man, the populations of many have seriously declined, and a few have become extinct.

The conservation of fauna depends on conservation of habitat, and in Victoria the public lands contain large areas of diverse natural habitats.

The Council believes that, in areas with particular wildlife values, the authorities managing public land should note the need for both research into and application of wildlife management techniques, and should actively collaborate with the Fisheries and Wildlife Division regarding these aspects of wildlife conservation.

In East Gippsland some classes of habitat may require deliberate management to maintain the most suitable conditions for important wildlife species. Some examples are listed below.

1. Wet heathland may gradually dry out by a process of peating. It may become necessary to maintain a certain number of shallow swamps or bogs in the heath, either by removing peat or by blocking drainage lines, to benefit such species as mourning skink and eastern brittle bird.

Prolonged protection of heath from fire may lead to lower diversity of plant species and ultimately the intrusion and domination of small trees. This is detrimental to such animals as the ground parrot and emu wren, and some areas of low new heath should be maintained—by deliberate burning if necessary. The most suitable intensity and frequency of fire will have to be determined.

Such procedures would be appropriate anywhere along the East Gippsland coast, although the choice of precise localities would have to await a thorough inventory of the habitat and its associated native animals. One promising area, however, is the complex of heath, woodland, and open forest between Sydenham Inlet and Cape Conran, because this is known to support a wide variety of wildlife.

2. The number of white-breasted sea eagles may be limited partly by the availability of suitable nest sites along the coast. Some trees appear to be used as traditional nest sites, and parent birds are liable to desert the nest site if disturbed. Therefore the locations of nesting trees should be recorded and an attempt made to keep human intrusion into these areas to a minimum. If circumstances require it, the environs of some nest sites could be proclaimed prohibited areas under the *Wildlife Act 1975*.
3. Where stands of saw banksia or silver banksia occur in association with commercially harvestable timber, they should be preserved, since they provide an extremely important food source for birds, mammals, and insects.
4. Wherever closed forest II (jungle) occurs it should be strictly protected and a free margin of open forest left around it. Very little of this plant association remains, and it supports a characteristic bird population—including brush cuckoo, large-billed scrub-wren, pink robin, lewin honeyeater, sooty owl, black-faced flycatcher, and brown warbler—and the highest density of brown antechinus, Stuarts antechinus, and bush rats in the study area.

WILDLIFE RESERVES

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 areas with particular wildlife values such as specialized breeding grounds, a high species diversity, or 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.

Recommendations

C1 Ewing Marsh

That the area of 7,300 ha shown on Map 1 be used primarily to conserve native animals, and for public education and recreation where this does not conflict with the primary aim

and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Fisheries and Wildlife Division.

Ewing Marsh is an important wetland area for waterbirds and duck-hunting. It also supports a small population of hog deer. The woodland and forests of the hinterland are important for native mammals and birds.

C2 Lake Corringale-Lake Wat Wat

That the area of 800 ha shown on Map 1 be used primarily to conserve native animals, and for public education and recreation where this does not conflict with the primary aim

and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Fisheries and Wildlife Division.

Lakes Corringale and Wat Wat form an important wetland area for water-birds and duck-hunting.

C3 Lake Curlip

That the area of 1,000 ha shown on Map 1 be used primarily to conserve native animals, and for public education and recreation where this does not conflict with the primary aim

and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Fisheries and Wildlife Division.

Lake Curlip is an important wetland area for water-birds and duck-hunting.

D. WATER PRODUCTION

Various streams in the study area are important for town water supply and irrigation. Three catchments—Rocky River (supplying Orbost, Marlo, and Newmerella), Cann River (supplying Cann River), and Betka River (supplying Mallacoota)—are proclaimed water supply catchments. The use of all land within proclaimed catchments is subject to specification by notice issued by the Soil Conservation Authority, or by determination made by the Authority after consultation with the Land Conservation Council.

Public land in the proclaimed catchments has been shown by blue cross-hatching on the map. Implementation of any recommendations for this public land will require recognition that water catchment values—such as water yield, quality, and flow regime—are of prime concern.

Another major catchment, although not a proclaimed one, that is important for town water supply is the Brodribb (supplying Orbost, Marlo, and Newmerella).

Water for irrigation is drawn mainly from the Snowy and Cann Rivers, but also from other streams.

Current management

None of the catchments in the study area is used solely for water production. Most public land areas within them supports hardwood timber-harvesting, recreation, and other forest uses, while normal agricultural pursuits are followed on most freehold areas.

Multiple use

Recognizing that the prime water-producing areas of the State coincide with the principal mountain and forested areas, and that inland water bodies are a major attraction for recreation—the Council believes that wherever possible there should be multiple use of catchments. 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 water supply authority.

The Council realizes that the optimum combination of land uses for catchments must vary from one land type to another, depending on the manner in which the environmental variables of climate, parent material, topography, soils, and organisms are inter-related. The Council is aware that a particular use may not impair the quantity, frequency, or quality of water yield in one instance, but may have a profound effect in another.

Where a number of other products are required from a catchment supplying water used for domestic, industrial, or irrigation purposes, the catchment should be proclaimed under section 22 (1) of the *Soil Conservation and Land Utilization Act* 1958 and also under section 5 (1) (b) of the *Land Conservation Act* 1970.

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

On the other hand, the water supply authority should control and manage the buffer strip (defined in the land use determination) around storages and diversion works in addition to the actual waterworks area. Although the primary object of management in the buffer must always be to protect water quality, there are situations where secondary uses (such as recreation and timber production) can be accommodated. In such circumstances, the principles of management must be agreed upon by the water supply authority and any other authorities concerned.

Water quality, yield, and regulation

The Council is aware that it is possible to improve the quality of water by treatment—at a cost. It must, however, be recognized that the higher the quality of raw water, the cheaper and more efficient the treatment is and, in most cases, the more acceptable the end-product. It is also vital to safeguard the quantity and timing of yield. Catchments must be protected from soil erosion, soil compaction, and contamination from chemical or biological sources.

The implementation of proper management of land uses within catchments is extremely important and recognition must be given to the greater-than-normal need for high levels of protection. Implementation of any recommendations for public land within catchments will require recognition that values such as water yield, quality, and flow regime are of prime concern. The Council recognizes the need for research to provide guidelines for such management.

Council considers that sterilization of drinking water is ultimately inevitable, even with controlled land use in catchments.

Where multiple land use in catchments is increasing in intensity, water supply authorities should provide, at the earliest possible time, facilities for sterilization of all drinking water in accordance with established standards. The Council notes that the Commission of Public Health and the Melbourne and Metropolitan Board of Works believe that the standards for water quality adopted by the World Health Organization should be the long-term goals for domestic water supply systems.

Additional water needs

Future water needs for domestic purposes and for stock and irrigation may require the construction of additional water storages. No specific areas can be reserved for this purpose until the need has been reasonably established and possible sites are investigated.

The Council notes suggestions to build dams on the Snowy and Rodger Rivers for flood mitigation and for irrigation.

Recommendations

D1 That for the Rocky River Water Supply Catchment shown on Map 1 (being a catchment that has been proclaimed and for which a land use determination has been made), the following areas :

- (i) any storage areas
- (ii) diversion works

- (iii) associated facilities
 - and
 - (iv) the buffer strips around diversion works and storages, as defined in the land-use determination
- 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 it be permanently reserved under section 14 of the *Land Act* 1958 for water supply purposes, and be managed by the Orbest Waterworks Trust.

Note : (i) The primary object of management of the buffer must be to protect water quality. Subject to this principle, the water supply authority may permit other secondary uses of the buffer. In such cases, the principles of management must be agreed upon by that authority and any other authorities concerned.

(ii) In cases where the above recommendations cause the control and management of an area to pass to a land management authority from a water supply authority which thus loses income, Council believes that the new management authority should pay adequate compensation or negotiate some other mutually acceptable arrangement.

D2-D3 That in the case of the locations listed below and shown on Map 1 (both locations being within catchments for which no land use determinations have been made) the present tenure and management of public land continue for the time being

and that

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

- (i) any storage areas
 - (ii) diversion works
 - (iii) associated facilities
 - and
 - (iv) the buffer strips around diversion works and storages, as defined in the land use determination
- 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 14 of the *Land Act* 1958 for water supply purposes, and be managed by the water supply authority named.

Note : (i) The buffer should be wide enough to prevent direct pollution, to filter overland flow of water, and to control access. Its width will vary to suit differences in ground slope, soil type, vegetative cover, adjoining land use, and type of facilities available for treating the water.

(ii) The primary object of management of the buffer must be to protect water quality. Subject to this principle, the water supply authority may permit other secondary uses on the buffer. In such cases, the principles of management must be agreed upon by that authority and any other authorities concerned.

(iii) In cases where the above recommendations cause control and management of an area to pass to a land management authority from a water supply authority which thus loses income, Council believes that the new management authority should pay adequate compensation or negotiate some other mutually acceptable arrangement.

D2 Cann River, Cann River Waterworks Trust

D3 Betka River, Mallacoota Waterworks Trust, in consultation with the National Parks Service

E. TIMBER PRODUCTION

HARDWOOD PRODUCTION

The East Gippsland study area at present sustains an annual sawlog supply of about 320 000 m³—or about 26% of the hardwood sawlogs currently produced each year from Victorian public land.

On the scale at which it has traditionally been practised, hardwood production is compatible with many other uses, such as conservation of flora and fauna and many types of outdoor recreation. It has also been a flexible use, allowing the possibility of later adaptation.

Constraints are, however, placed on timber production in order to protect floral, faunal, recreational, water catchment, and landscape values when intensive silvicultural techniques such as clearfelling are employed, and as the community becomes increasingly aware of other forest values. Logging is excluded from reference areas and from many parks ; furthermore, within the hardwood production areas, management prescriptions normally apply restrictions in areas close to streams, on steep slopes, or of special landscape significance.

The net area available for timber production thus decreases, and it may therefore be necessary to increase the productivity of areas to be used for timber production, despite the fact that their capability for non-timber uses may well decline as a consequence.

The Council believes that most of Victoria's timber requirements could be produced from intensively managed forests located in the areas of highest productivity. Intensive management is the accepted practice with softwood and other forms of primary production ; in the case of hardwood it has the advantage of reducing the costs involved in roading, harvesting, regeneration, protection, and management. Although there would still be a general constraint to maintain the productivity of these areas, short rotations, changes in species or genetic strains, application of fertilizers, and extensive clearing would be appropriate in some instances. Areas of relatively flat terrain with a high capability for hardwood timber production, where conflict with landscape, recreational, and catchment values would be minimal, would be suitable for intensive management. The Council realizes that, although some areas of ash-type species are intensively managed at present, the extension of this type of management to significant areas of forest can be achieved only in the long term. Thus many existing forests—which have generally resulted from past fires and logging activity and whose productivity is far below their potential—must continue to be used to meet existing and foreseeable needs, and in these recommendations hardwood timber production remains the primary use over large parts of the study area.

The Council also realizes that the recommended hardwood production area contains a mosaic of forests of varying productivity, including some parts that are unsuitable for timber production. These are nevertheless included for ease of management. The hardwood production area also includes some areas of productive forest with significant water production, landscape, or conservation values. Constraints are therefore imposed in some cases and the Council has defined areas where particular non-timber values must be protected.

The Councils recommendations set aside 433,000 ha primarily for timber production and, subject to certain conditions, harvesting operations would also be permitted on uncommitted land (R1)—except as specified in recommendation R1 (c) (i) dealing with the Goolengook River area and recommendation R1 (c) (ii) dealing with the Gelantipy Plateau-Bowen Range area. Council believes that this provides a source sufficient to maintain a viable timber industry, which would continue to make a significant contribution to the economy of the region and the State.

Recommendations

E1 That the area of approximately 433,000 ha shown on Map 1 be used :

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

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 in consultation with the Fisheries and Wildlife Division (see Chapter C—Wildlife Reserves)
- (iii) produce honey, forage, gravel, sand, and other forest produce as defined in the *Forests Act* 1958
- (c) water production values be recognized
- (d) particular values including those listed below be protected by means of reserves under section 50 of the *Forests Act* 1958, or by management prescriptions prepared (in the case of fauna) in consultation with the Fisheries and Wildlife Division
 - (i) particular attention should be given to the conservation of the following native animals—greater glider, yellow-bellied glider, tiger cat, potoroo, platypus, eastern water-dragon, sooty owl, and powerful owl
 - (ii) the valley of the Brodribb River contains “jungle” vegetation that is valuable for nature conservation
 - (iii) the easternmost stand of mountain ash and the adjacent extensive stands of sassafras closed forest that straddle the Coast Range road are valuable for nature conservation
 - (iv) Maramingo Hill provides good views of surrounding areas
 - (v) Beehive Creek contains a series of attractive waterfalls and cascades among granite boulders
 - (vi) attractive cascades exist in Tonghi Creek, north of the Princes Highway
 - (vii) waterfalls occur in several tributaries of the Combienbar River
 - (viii) the upper part of Tennyson Creek catchment should be managed in such a way as to retain its nature conservation values and supplement the adjacent flora reserve in New South Wales

- (ix) Mount Buck has several sites of botanical significance : occurrences of the rare species, slender tree fern and satinwood ; the western limit of the distribution of bower wattle ; and a taxonomically interesting occurrence of different forms of *Tieghemopanax*

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

SOFTWOOD PRODUCTION

At this time, Council does not consider that land should be reserved for softwood planting in the East Gippsland study area. The uncommitted land, however, includes some areas that could be suitable for this purpose in the future.

The need to allocate areas for softwood will be reviewed if a requirement to supplement existing timber supplies arises. If, after review, it is considered necessary to allocate land for this use, some areas may be made available to private companies on the basis of long-term leases, provided these companies embark on a programme of softwood planting on suitable freehold land in the vicinity of public land set aside for this purpose.

UTILIZATION OF SAWLOG RESIDUES

Timber operations in East Gippsland are primarily aimed at producing sawlogs on a rotation of at least 70 years. Considerable volumes of wood are left on the ground in the forest as sawlog residues, which could be utilized for pulpwood. This, however, has certain environmental implications. Council has given consideration to the utilization of these sawlog residues, and other pulpwood-class material, but, because of the lack of information relevant to such use, is not in a position to recommend either *for or against* the commencement of large-scale pulpwood operations.

Council nevertheless believes that—while recommending uses for land in the study area (parks, etc.) that exclude the harvesting of timber—it has maintained the option to establish an economically viable major pulpwood industry. At the same time, it has maintained the option of other strategies that have a lower annual volume requirement and that would have a lesser environmental effect than a large scale operation.

The following recommendations are made in the event that a pulpwood industry is established in East Gippsland.

Recommendations

- E2** That no commitments be made to supply industry with pulpwood, other than for experimental purposes, until an environmental assessment has been made that considers the scale of the operation and long-term effect.
- E3** That, if a pulpwood-based industry is established, pulpwood production from sawlog-harvesting residues and from associated regeneration operations be fully utilized in preference to harvesting pulpwood from additional land, subject to branches and leaves being left in the forest.

- E4** That, if a pulpwood-based industry is to be established, the Forests Commission—in consultation with the Soil Conservation Authority, Fisheries and Wildlife Division, State Rivers and Water Supply Commission, and other appropriate bodies—prepare detailed guidelines and continue to monitor the key environmental effects of the operations, and that desirable modifications to operational procedures and to the guidelines be progressively made as new knowledge becomes available.
- E5** That, if it is found necessary to supplement available supplies of pulpwood, consideration be given to implementing high-yielding production strategies, such as shorter rotation or, after review by Council, the establishment of softwood plantations.

Additional information regarding the utilization of saw-log residues is provided as Supplement 2 to these Recommendations.

The Council has set out below a number of principles, which it believes should provide a framework for the detailed guidelines in the event that the government decides to establish a pulpwood industry in East Gippsland.

Principles

A. Retained areas

1. A minimum distance of 40 m from each bank of all permanent streams should be reserved from felling operations. This width should be increased where necessary to protect values associated with streams and their environs. Streams should be kept clear of logging debris. There should be no snagging through streams or retained strips, nor—except for operations associated with the construction of roads, crossings, or other essential works—should clearing, log dumping, log loading, or similar operations be permitted in these areas.
2. Areas of significance for nature conservation or recreation should be identified and protected by reservation from felling or by applying special prescriptions to forest operations.
3. Retained areas should be linked wherever possible, to provide continuous habitat for fauna.

B. Harvesting

1. The managing authority should give careful attention to road and track location, design, and drainage, considering both their functional purpose and their impact on the environment.
2. Intensive utilization operations should be avoided on areas of high erosion hazard, including steep slopes.
3. Where clear cutting is necessary because of silvicultural, economic, or other requirements, careful consideration should be given to both configuration and size of the cutting area (coupe), which should normally not exceed 80 ha.
4. Individual cutting areas should be separated in space and time, as far as economically possible, so as to create habitat and landscape diversity and minimize any adverse effect on soil and water values.

5. Mature and veteran trees should be retained as scattered individuals, and in groups as far as practicable on cutting areas and chosen to meet both silvicultural and nature conservation requirements.
6. Camp sites associated with harvesting operations, log dumps, and log landings should be carefully sited and rehabilitated when no longer required. Where practicable, snig tracks should receive similar attention.

C. Regeneration

1. The regeneration techniques used should be chosen so as to minimize the impact on the environment (consistent with achieving adequate regeneration).
2. Tree species used to regenerate areas should be those native to the site, where possible.

D. Protection

1. Fire-protection measures involving fuel-reduction burning should aim at creating a mosaic of burnt and unburnt areas, so that habitat for soil micro-fauna and other animals is not seriously impaired and soil and water values are maintained.
2. Before application, pesticides and herbicides should be carefully assessed for their possible deleterious effect on the environment. Use of particular chemicals should be avoided where unacceptable adverse effects are indicated.

F. FLORA RESERVES AND FLORA AND FAUNA RESERVES

FLORA RESERVES

These reserves are significant because they contain examples of native vegetation with considerable floristic value in a natural or near natural state. They are set aside primarily to conserve species that may be rare or endangered and associations of native plants that are poorly represented on public land. Council recognizes that all flora reserves have an associated fauna, and where these values are known they have been referred to in the following recommendations.

Recommendations

F1–F10 That the areas on Map 1 and described below be used to conserve particular species or associations of native plants ;
and that they be permanently reserved under section 14 of the *Land Act* 1958, and be managed by the authority specified below.

F1 Mottle Range

120 ha be used to preserve the only known natural occurrence of spotted gum within Victoria—to be managed by the Forests Commission.

F2 Wood Point

40 ha be used to preserve the only known natural occurrence of *Symplocos cochinchinensis* within Victoria—to be managed by the Forests Commission.

F3 Cabbage Tree Creek

1,700 ha be used to preserve streamside communities, and particularly cabbage fan palm—to be managed by the Department of Crown Lands and Survey. This reserve includes an important representative sample of the Noorinbee land system.

F4 Delegate River

600 ha be used to preserve sub-alpine bog vegetation—to be managed by the Forests Commission.

F5 Goonmirk Rocks

650 ha be used to preserve montane closed forest, and particularly trees of mountain plum pine—to be managed by the Forests Commission.

F6 Kanuka Creek

200 ha be used to protect shining gum open forest and sassafras closed forest—to be managed by the Forests Commission.

F7 Mount Kaye

300 ha be used to protect the following rare plant species : wax flower (*Eriostemon virgatus*), long clubmoss, club rush (*Scirpus gunnii*), long-leaf bitter pea, dainty wedge-pea, mat rush (*Lomandra obliqua*), and mint bush (*Prostanthera walteri*)—to be managed by the Forests Commission.

F8 Mount Drummer

2,500 ha be used to preserve lowland closed forest ("jungle") communities—and particularly oval fork-fern, prickly tree fern, and violet nightshade—to be managed by the National Parks Service.

The Mount Drummer closed forest is of great botanical interest and provides habitat for a number of animal species that are closely associated with closed forest. This habitat has limited extent in Victoria.

F9 Jones Creek

80 ha be used to preserve *Eucalyptus cephalocarpa* woodland, which is particularly rich in terrestrial orchids—to be managed by the Forests Commission.

F10 Maramingo Creek

320 ha be used to preserve swamp vegetation—and particularly lanky fescue, bog clubmoss, rare veined sun orchid, rush fringe lily, dwarf yellow-eye, and two-coloured panic—to be managed by the Forests Commission.

Note : Areas are approximate.

FLORA AND FAUNA RESERVES

These reserves are significant because they contain flora and fauna communities in a natural or near-natural state on small blocks of public land.

Recommendation

F11 Brodribb River

That the area of approximately 36 ha shown on Map 1 be used to preserve a remnant of the land type on the Snowy River–Brodribb River flood plain, with particular emphasis on the cabbage fan palm and native fauna ;

and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Division of Fisheries and Wildlife.

G. BUSHLAND RESERVES

These areas, relatively small and isolated from large blocks of public land, carry remnants of native vegetation, providing diversity in the landscape. They may also provide some opportunities for passive recreation in relatively natural surroundings. The areas are generally too small to be significant for fauna conservation, although some may be important for migratory birds.

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

Recommendations

G1–G3 That the areas shown on Maps 1 and 2 and described below be used to :

(a) maintain the local character and quality of the landscape
and

(b) provide opportunities for passive recreation such as picnicking and walking and that they be permanently reserved under section 14 of the *Land Act* 1958, and be managed by the authority specified below.

Expansion of any existing recreational facilities or new development should be permitted only where this does not conflict with the primary aim.

G1 Mount Bendock

165 ha at Mount Bendock—to be managed by the Forests Commission.

G2 Cann River

10 ha in the township of Cann River, west of the Cann River—to be managed by the Department of Crown Lands and Survey.

G3 Mallacoota

30 ha in the township of Mallacoota—to be managed by the Department of Crown Lands and Survey.

Note : Areas are approximate.

H. THE COAST

The coastline of the study area is a resource of great value for both recreation and nature conservation.

In formulating the following recommendations for public land along the coast, the 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 any Committees of Management on the coastal reserve should be subject to approval (prior to implementation) by the Department of Crown Lands and Survey.

Other Government agencies concerned with coastal development (such as the Ministry for Tourism and the Department of Youth, Sport and Recreation), or with coastal maintenance (such as the Ports and Harbors Division of the Public Works Department) should also consult with the management authority before authorizing any expenditure for the implementation of coastal works.

COASTAL RESERVES

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.

Recommendations

H1-H3 That the areas listed below and shown on Map 1 :

(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 historic 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 shipping, fishing, and boating (including harbor facilities) together with the necessary navigation aids

that the management authorities :

- (b) zone the areas in order to provide for the range of uses outlined above
- (c) manage the areas according to the policies they develop in consultation with the Ports and Harbors Division, the Soil Conservation Authority, and the Shire of Orbost

- (d) in their 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 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 coastal reserves, the management authority should avoid locating these on sensitive areas or areas of importance for nature conservation.

that

- (e) in order to rectify or prevent soil erosion on coastal public land, the Soil Conservation Authority should, after consultation with the managing authority and the Ports and Harbors Division, recommend that the Governor in Council proclaim certain sections of the coast with a view to carrying out such reclamation and stabilization measures as are necessary and determining appropriate land uses and management practices

and that

- (f) the areas be permanently reserved under section 14 of the *Land Act* 1958 as coastal reserve, their seaward boundary being low-water mark, and be managed by the Department of Crown Lands and Survey.

H1 Lake Tyers

This reserve includes the eastern side of the entrance of Lake Tyers and part of the Ninety Mile Beach.

H2 Corringale Creek to Sydenham Inlet

This reserve includes the eastern end of the Ninety Mile Beach, both sides of the mouth of the Snowy River, Point Ricardo, Cape Conran, Pearl Point, the Yeerung River estuary, Dock Inlet, and Sydenham Inlet. The Department of Crown Lands and Survey should make provision for camping at Cape Conran in accordance with the principles outlined above.

H3 Mallacoota

This reserve includes the water frontage to Mallacoota Inlet from opposite Snapper Point to the entrance of the Inlet, Bastion Point, the lower part of the Betka River estuary, and ocean frontage to the southern end of Mallacoota aerodrome. There is an existing camping area on this coastal reserve.

SCENIC COASTS

A scenic coast is defined for the purpose of these recommendations as a coastline of outstanding beauty that remains in a relatively unspoilt state.

This quality is derived primarily from natural attributes, but may be supplemented or enhanced by man-made features such as lighthouses that serve to dramatize the landscape, or by pleasant rural landscape elements.

A high proportion of the East Gippsland coastline fits this description, and is an important component in the State's coastal landscape heritage. The Council believes that it is important to protect the landscape qualities of such coastlines, and that such areas should be used primarily for public enjoyment, education, and inspiration in coastal surroundings in a manner that will leave landscape values unimpaired.

In making these recommendations for the East Gippsland study area the Council has taken into account the landscape qualities of the coastline elsewhere in the State.

Recommendation

H4-H6 That those portions of the East Gippsland coastline shown on Map 1 be designated scenic coast, and that planning and management in the areas concerned give special emphasis to the protection of their outstanding natural landscape qualities.

I. RIVERS AND STREAMS

PUBLIC-LAND WATER FRONTAGES

Along numerous rivers and streams in the study area a strip of public land has been retained between the water and adjacent alienated land. No public-land strip adjoins land alienated before 1881, and a large number of properties in the study area have titles that extend to the banks of a stream.

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

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

Adjoining occupiers frequently 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, the public are legally entitled only to walk through a licensed frontage. Licences for previously unlicensed public water frontages, now being issued by the Department of Crown Lands and Survey, require the licensee to erect a stile or gate in any fence

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

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

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

Public-land water frontage reserves

Water frontage reserves are defined for the purposes of these recommendations as being all existing water frontage reserves and other reserved or unreserved public land adjoining streams, except for those areas that have been set aside elsewhere in these recommendations, either as part of a large reserve (such as a national park or reserved forest) or for some special purpose (such as a wildlife, flora, recreation, or streamside reserve).

Recommendation

II That the public land defined above

(a) be used to :

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

that

- (b) (i) where a licence has been issued for a public-land water frontage as in (a) (v) above, restricted recreation use by the public should be permitted (non-damaging activities such as walking, observing nature, fishing, or just relaxing should be allowed, but 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 may be required to fence off and exclude stock temporarily from some parts of the licence area where, in the opinion of the management authority, special measures are necessary to protect water supplies, to rehabilitate eroding areas, or to permit regeneration of native plants that have particular value for nature conservation

that

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

that

- (d) (i) public-land water-frontages be permanently reserved under section 14 of the *Land Act 1958*
- (ii) where it is adjacent to or within a proposed national, State, or regional park, reserved forest or education area, or reference, bushland, stream-side, scenic, flora or fauna, or wildlife reserve, it be managed by the authority responsible for the adjoining or surrounding land
- (iii) where it is not adjacent to a park or reserve described in (d) (ii) above, it be managed by the Department of Crown Lands and Survey or by a committee of management where one is appointed.

RIVER IMPROVEMENT

River improvement trusts have been constituted under the *River Improvement Act 1958* for sections of the Snowy, Brodribb and Cann Rivers in the study area.

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

The works carried out include :

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

- * realigning and altering a stream by the use of wire-mesh fencing and log or concrete barriers.

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

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

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

Removal of snags from the centres of wide streams damages fish habitat, but the tethering of these snags against the banks may provide alternative fish habitat as well as protecting the banks from erosion. Realigning and regrading of eroding beds and banks often removes holes and backwaters of value as fish habitat and for angling and swimming at 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. Construction of mesh fencing or log barriers frequently make access to the river difficult, but are an integral part of preventing stream erosion.

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

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

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

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

Recommendations

- 12** 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.
- 13** That plans for all works (other than those of a minor nature), together with an assessment of their environmental consequences, be submitted to the *Standing Consultative Committee on River Improvement* for consideration prior to the commencement of works.
- 14** That detailed guidelines based on the principles set out above be prepared by the *Standing Consultative Committee on River Improvement* to ensure that an optimum balance is achieved between the purpose and implementation of works on the one hand and the maintenance or enhancement of the stream's landscape values and its value as a habitat for wildlife and for recreation on the other.

The abovementioned Standing Consultative Committee on River Improvement now in existence comprises representatives from the following :

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

J. ROADSIDE CONSERVATION AND HIGHWAY PARKS

Generally the vegetation on road reserves, although it affects landscape values, is somewhat less important for conservation in East Gippsland than in areas that have been predominantly cleared for agriculture. The roadside environment of main roads does, however, depend largely on management of the road reserve. It is important that the managers concerned (usually the Country Roads Board and the Orbost Shire Council), and the managers of adjacent public land, consider these landscape values, and that vegetation on the road reserve be disturbed to the minimum extent consistent with the safe and efficient design and use of the road.

Unused roads

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

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.).

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.

(The following stopping-off places will become available as a result of the Council's recommendations for East Gippsland : along the Princes Highway—Lake Tyers State Park, Mount Raymond Regional Park, McKenzie River Highway Park, Bemm River Scenic Reserve, Euchre Creek Scenic Reserve, and Croajingalong National Park ; along the Bonang Highway—Martins Creek Scenic Reserve and The Gap Scenic Reserve.)

Recommendations

Unused roads

J1 That the following guidelines be applied to unused roads :

- (i) The clearing of native trees and shrubs other than noxious weeds should continue to be clearly prohibited in the conditions of unused-road licences.

- (ii) A condition permitting public use of licensed unused roads should be written into unused-roads licences where necessary to provide practical access to public land.
- (iii) 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 park

- J2** That the area (approximately 40 ha) south-west of where the Princes Highway crosses the McKenzie River, shown on Map 1, be used for picnicking and to provide relaxation for the travelling public, and that facilities in keeping with the nature of the reserve be provided ;
and that it be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Forests Commission.

Roadside picnic areas

- J3** That the land management authorities establish roadside picnic areas in suitable locations (for example where the Princes Highway crosses the Thurra and Wingan Rivers).

K. EDUCATION AREAS

Environment 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 use as, unless that 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.

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., 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 hazards

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 use of the areas.

Recommendations

K1-K4 That the areas of public land listed below and shown on Map 1 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 14 of the *Land Act* 1958, and managed by the Forests Commission except where otherwise specified.

K1 Bidwell (300 ha)

The plateau environment and higher-elevation vegetation.

K2 Sardine Creek (200 ha)

Foothill environment, with a substantial frontage to the Brodribb River.

K3 Bemm River (500 ha)

Coastal heath and woodland communities, close to the ocean beach and Sydenham Inlet; Pearl Point, nearby, provides an example of a rocky shore of Ordovician sedimentary rock ; to be managed by the Department of Crown Lands and Survey.

K4 Serpentine Creek (500 ha)

Coastal plains environment.

Note : Areas are approximate.

L. RECREATION

The term recreation includes the multitude of different activities that people undertake during their leisure time. In fact, the distinguishing characteristic of recreation is not the activity itself so much as the attitude with which it is undertaken—activities (or inactivities) undertaken with little or no feeling of compulsion 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 recreation activities include all organized sports and other group activities, while activities such as picnicking, fishing, and hiking are grouped as informal.
- * Passive recreation covers situations where the individual obtains his recreation through absorbing the sights, sounds, and atmosphere of the surrounding environment while expending little physical effort. Examples are picnicking, nature observation, and strolling.
- * Active recreation covers situations where the individual must expend considerable physical effort to obtain some mastery of physical forces in order to satisfy his particular recreational needs. Examples are playing organized sport, bushwalking, and rock-climbing.
- * Open-space recreation includes all recreational activities that require spacious outdoor surroundings, whether the activities be active or passive, formal or informal.
- * Intensive recreation involves large numbers of people per unit area. For example areas such as picnic grounds and beaches near Melbourne 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 much public land should be available for recreational uses of some sort.

Accordingly, it has set aside a variety of reserves that will provide 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 any 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 in sub-alpine, coastal, and low-rainfall areas, and where the natural environment or special natural features are being preserved.

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

Any vehicle registered under the *Motor Car Act 1958* has access to any legally open road anywhere on public land. Roads are defined in the *Land Conservation (Vehicle Control) Regulations* as being “any road formed for the passage of vehicles having four or more wheels”. The land management authority can close roads when traffic exceeds their physical capacity, or when vehicular access or its associated activities seriously conflict with the area’s primary purpose. Seasonal closure of some roads may be necessary to avoid erosion and excessive maintenance, or because of extreme fire hazard. As the intensity of recreational use on public land increases, it is inevitable that more roads and tracks will be closed to vehicular access, particularly in areas with erodible soils. Council believes that these closures will not significantly reduce the many hundreds of kilometres of roads and tracks currently open to the public.

Motor vehicles leaving roads on public land without the written permission of the land management authority contravene the provisions of the *Land Conservation (Vehicle Control) Act 1972* and *Regulations*. Moreover they can, and do, cause extreme damage to vegetation and soils.

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 or general camping.

Camps on public land vary greatly—in the purpose for which they are constructed, in their standard of maintenance, and in the degree to which they are used. Some are designed to provide full accommodation, with campers living in huts that have electricity and hot water provided; others have only minimal facilities, with campers living in tents. Some have had 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 camp may be needed, Council believes that any camps permitted on public land should be properly located, constructed, and maintained. For efficient management of camps, it may be necessary for a single organization to be given tenure over a minimum area at any individual camp site under the control of the land management authority. Council believes, however, that these camps should still be used as fully as possible consistent with avoiding damage to the environment. The wider use of camps on public land is desirable in order to avoid proliferation of camp sites, and there is 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.

Recommendations

- L1** That public land continue to be available for a wide range of recreational uses where these can be accommodated without detriment to other values. Land management authorities should aim at controlling the types, levels, and patterns of recreational use according to the capability of particular areas to sustain such use without irreversible change or significant conflict with the primary purpose of the area.
- L2** 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.
- L3** That the area of approximately 45 ha east of allotment 9A of Section B, Parish of Newmerella, be made available for off-road vehicular use under the provisions of the *Land Act* 1958, and be managed by the Department of Crown Lands and Survey.

Note : If there is a demand for additional land for this purpose, the land management authorities may provide for this from land under their control.

L4-L8 That the areas described below and shown on Map 1 be used for organized sports (football, horse-racing, golf, etc.) and informal recreation (picnicking, camping, etc.) as permitted by the managing authority and that they be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Department of Crown Lands and Survey.

L4 Existing recreation reserves.

L5 Marlo (4 ha)

This is an extension to the existing camping reserve.

L6 Tonghi (95 ha)

This area, south-west of Cann River, is to provide a golf course and other recreational facilities for the people of Cann River, and native vegetation should be retained where practicable.

L7 Cann River (4 ha)

This reserve, adjacent to the Princes Highway in the west of the Township of Cann River, is currently used as a camping area, but its size has been increased to allow for future expansion.

L8 Cann River (10 ha)

This area, in the north-west of the Township of Cann River, west of the Cann Valley Highway, is for recreational use by the people of Cann River and tourists.

Note : Areas are approximate.

M. SCENIC RESERVES

These areas are set aside to preserve scenic features or lookouts of particular significance.

Recommendations

M1–M7 That the areas listed below and shown on Map 1 be used to preserve scenic features or lookouts and that they be permanently reserved under section 14 of the *Land Act* 1958, and managed by the Forests Commission.

M1 Martins Creek (200 ha)

M2 The Gap (170 ha)

M3 Mount Delegate (300 ha).

Note : No new gravel pits should be opened up, and consideration should be given in management to minimizing the visual impact of existing pits.

M4 Mount Ellery (1,400 ha)

M5 Arte River (100 ha)

M6 Bemm River (600 ha)

M7 Euchre Creek (350 ha)

Note : Areas are approximate.

N. AGRICULTURE

Agricultural land

Council has carefully considered the submissions received regarding the use of public lands for agricultural production, and has made recommendations for the alienation of areas of public land considered most suitable for agriculture.

The land already alienated has some potential for increased production through more intensive development.

The study area contains areas of public land with potential for development for agriculture. Much of this land has been left uncommitted, and could be alienated in the future for agricultural production if economic conditions favour development.

Isolated blocks

A number of isolated blocks of private property are scattered through the study area.

Families living on and farming these blocks not only must cope with the problems normally associated with farming but also face the additional difficulties of isolation, high transport costs, and the increased risk of fire due to their location within extensive tracts of forest. Some of these families may wish to exchange their land for a more conveniently situated property closer to an established agricultural centre. This would give them increased access to services and facilities that are already established and at the same time reduce somewhat the cost to the community of providing such facilities as roading and telephone services.

The Council believes that suitable public land can be made available for those owners of isolated property who wish to move to a more accessible area. The Council emphasizes, however, that the decision to seek an exchange of land rests solely with the owners, and the intention of this recommendation is to give those families who choose to move the opportunity to do so.

Grazing on public land

Forest grazing has formed an integral part of the agriculture of the study area for many years. Currently 35 graziers hold forest grazing licences from either the Department of Crown Lands and Survey or the Forests Commission. Between 15 per cent. and 20 per cent. of the beef cattle in the study area are run in the bush at some stage each year.

In some instances, farmers have incorporated the grazing of licensed land into their system of grazing management. In addition, some parts of the study area suffer from effects of regular and frequent flooding and waterlogging of pastures. These problems can be alleviated by provision of higher dry ground on which to keep stock when land on the farms is too wet. In both these situations, consideration should be given to making land available under a longer-term licence (such as 21 years) rather than under an annual licence.

Twenty-one-year licences with stringent conditions on the use of fire and with conditions that permit the managing authority to exercise general supervision of the management of the licensed land, especially with respect to stocking rates, give the licensee reasonable security of tenure, and thus encourage him to conserve the grazing resource.

Situations also arise where graziers who are not normally dependent on forest grazing do require additional areas to provide short-term feed. These situations include drought, fire, and severe and widespread flooding. Council believes that areas of public land should be available to meet such emergency situations and that such grazing could be controlled by the issue of either agistment rights or annual grazing licences.

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 and the formulation of a common policy in the selection and management of areas on which grazing will be permitted.

Thus a committee—comprising representatives of the Forests Commission, the Department of Crown Lands and Survey, the Department of Agriculture, the Soil Conservation Authority, and the graziers—is needed to advise the management authority with respect to :

- * forms of tenure
- * selection of the areas suitable for grazing, their allocation, and the delineation of their boundaries (the Council's recommendations for the study area may necessitate some reallocation of leases)
- * type of livestock and stocking rates
- * fencing and water supply
- * exclusion of stock when and where necessary to provide for the conservation of flora and fauna or the reclamation or eroded areas
- * review of rental procedures

In advising the management authority, due consideration would need to be given to the financial implications of terms and conditions that may be attached to the licence. Some suggested terms and conditions are given below.

- (i) In the case of long-term licences, the licence will be reviewed after two-thirds of the time has expired and a decision on renewal for a further period will then be made
- (ii) Cultivation and clearing will not be permitted, except when this is necessary to control vermin and noxious weeds
- (iii) Licensed areas will continue to be available for timber production, apiculture, and other uses that would be permitted if the area was not licensed
- (iv) The conditions applying at present to grazing licences under the *Land Act* 1958 and the *Forests Act* 1958 that are consistent with these recommendations and suggested terms and conditions will apply.

Agricultural research

An experimental farm (Tostaree Pilot Farm) was established in the early 1960s to assess the likely costs of development of farms in the Hartland area (Waygara land system). The site was selected after a soil survey of the whole Hartland area, because it contains soils representative of the area. Although the farm is not currently used for agricultural research, it may be valuable for that purpose in the future.

Recommendations

Agricultural land

N1 That the land described in schedule 1 below (approximately 4,700 ha) and shown on Maps 1, 5, and 6 be used for agriculture.

With reference to section 5 (3) of the *Land Conservation Act* 1970, the Council recommends that land in the schedule be made available for agriculture in accordance with the provisions of the *Land Act* 1958. It is intended that this land should be used to increase the efficiency of agricultural production in the area.

SCHEDULE 1 LAND RECOMMENDED FOR AGRICULTURE

Parish	Location	Area (ha)
Bidwell	Allotment 5c of section A	60
Maramingo	N. of allots. 5, 6, 7, and 8 of section A	240
Orbost	North of allotment 47a of section A	94
Newmerella	Adjacent to allotment 8e of section C	3.6
Newmerella	North of allotment 15 of section B	16
Noorinbee	Allotments 24 and 24L	47
Noorinbee	East of allotments 31 and 31A	90
Nowa Nowa South	Part of allotment 7b	4.1
Tildesley East	Allotment 2c of section A	44
Tildesley West	Allotment 33	80
Tildesley West	Allotment 41H	15
Tonghi	East of allotment 29c	100
Bete Bolong South	South-east of Parish	} Approx. 1400
Tildesley East	North-east of Parish	
Waygara	North-west of Parish	
Noorinbee	West of allotments 10, 30A, 18, 38, 38c, and 39a of section A	} Approx. 2500
Tonghi	West of Old Coast Road	

Isolated blocks

N2 That the area of 3,500 ha shown on Map 1 be held for agricultural use to accommodate owners of isolated blocks of private property wishing to apply for land in a more convenient location and that the land not used for this purpose be Uncommitted Land (see Recommendation R1).

Note : Other areas recommended for agricultural use would also be available for this purpose if appropriate.

Grazing on public land

N3 That

- (a) grazing be permitted on land reserved for timber production and on uncommitted land, the precise areas to be determined by the management authority that
- (b) on areas where grazing is permitted, the form of tenure be, as considered most appropriate by the management authority, agistment, annual licence, or longer-term licence of up to 21 years and that
- (c) a committee be set up as described above to advise the management authorities on matters relating to grazing on public land.

Agricultural research

N4 That the Tostaree Pilot Farm be reserved under section 14 of the *Land Act* 1958, and managed by the Department of Crown Lands and Survey.

O. 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, uneconomic deposits of currently important minerals may become economically exploitable and other minerals that are not used at present may become important.

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

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

Recent legislation has improved control of operations by holders of miner's rights, and some areas in the State are excepted under the *Mines Act* 1958 from occupation for mining purposes. Before such operations are authorized, the Department of Mines should consult the public authority or Department that managed the land.

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

The Council is concerned by the complexity of legislation and procedures governing extraction of "stone", and by the lack of control accompanying some of these procedures, whether in theory or in practice. (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 some instances the rehabilitation of excavated land is lagging.

Poorly planned and located excavations can affect surrounding lands through noise, dust, unsightliness, and erosion, and can diminish the value of the land for nature conservation. With care, however, these effects can be entirely removed or minimized.

The Council believes that :

- (i) All exploration for and extraction of "gold", "minerals" and/or "petroleum" on public land should be subject to the approval of, and to conditions imposed and enforced by, the Department of Mines, in consultation with the authority managing the public land.

In considering an application, the Department of Mines should apply the guidelines listed below and should consult with the managing authority—and where necessary, with the Soil Conservation Authority—with a view to agreeing on reasonable conditions to be enforced by the Department.

- (ii) There should be co-operation and consultation between the land managing authorities, the Mines Department and 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 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.

- (iii) A system should be established that would guarantee available funds for progressive and final reclamation for any excavation or operation before work commences. This is already the case in progressive reclamation operations where the *Extractive Industries Act* applies.
- (iv) 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.
- (v) The following guidelines should apply to all extraction from public land.

- * No sites for the extraction of “gold”, “minerals”, and “petroleum” should be opened in areas that the Mines Department, after consultation with the land management authority, considers to be of greater value for their aesthetic or nature conservation values.

The Mines Department should not permit any extraction of “gold” or “minerals” unless satisfied as to the reasonable economic viability of the proposed extraction. The Department should also require, as far as is reasonably possible, the lodgement of mining plans that show the expected post-mining state of the land.

- * No sites for the extraction of “stone” should be opened in areas that the managing authority considers to be of greater value for their aesthetic or nature conservation values.

- * Extraction of “stone” should generally be concentrated on the fewest possible sites in an area, and any one site should be completely worked out and where possible rehabilitation ensured before a new site is exploited. Where the nature of the resource permits, excavations for “stone” should be deep and limited in area in preference to shallow excavations over a wide area. The extraction of granitic sand occurring as shallow deposits in the weathered profile should not be permitted until it has been established that no suitable alternatives are available. In the special circumstances where approval is given for this form of extraction, particular attention should be given to the prevention of soil erosion.

- * Where an application for the removal of “stone” from a stream bed is considered, the land management authority must 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. Before giving approval, the authority should

consult with the State Rivers and Water Supply Commission, the Soil Conservation Authority, the Environment Protection Authority, and the Fisheries and Wildlife Division, and should consider the scenic and recreation values of the area.

Alternative sources with a lower environmental impact should be used where they are available. The environmental effect of extraction may be reduced if alluvial stone is obtained from properly managed quarries on the river terraces, rather than from the present bed of stream.

- * All extraction sites should be fully rehabilitated where possible. Rehabilitation should follow extraction progressively when possible, but otherwise should begin immediately extraction is completed. The requirements for rehabilitation should be included in the conditions of the lease or licence before any approval to extract is granted. The rehabilitation may include, for example, replacing topsoil, revegetating the site with plantation forest, filling a quarry with water and developing the site as a park, using a gravel pit for off-road vehicles, using a quarry for garbage disposal prior to rehabilitation, or restoring the site as closely as possible to its original topography and revegetating it with species native to the site.

Recommendation

- O1** That public land in the study area (other than land excepted from occupation for mining purposes under the *Mines Act* 1958 and the *Land Act* 1958) continue to be available for exploration and extraction of "gold", "minerals", "petroleum", and "stone", subject to the principles and guidelines set out above.

P. UTILITIES AND SURVEY

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

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

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

For many years there has been discussion about an "ocean road" to encourage tourism. (Ocean roads are coast-hugging tourist or scenic roads, routed as closely as possible to the shoreline, often on vulnerable dunes or cliffs.) In addition, it has been suggested that the proposed road would ease the problem of Bemm River and Mallacoota being isolated by flood or fire.

Council is generally opposed to ocean roads because of their adverse effects on coastal planning and coastal land use, but believes that road access should be available to a number of points along the coast (see Recommendation A1 (e)). Consideration should be given to alleviation of the flood problem by realigning existing access roads, and alleviation of fire-access difficulty by upgrading some existing tracks.

Council also believes that the Old Coast Road between the townships of Bemm River and Cann River, and the Aerodrome Track, Betka Track, and Stony Peak Road between Mallacoota Aerodrome and the Princes Highway could be upgraded to a standard suitable for tourist use.

Recommendations

Roads, powerlines, pipelines, and other utilities

- P1** That existing easements continue to be used to provide access and services.
- P2** That new roads, powerlines, pipelines, and other utilities be sited to minimize disturbance to public land and protect the values associated with this land, and not impinge on public land without the agreement of the management authority, and that new pipelines and powerlines follow existing easements if possible ; this may require widening some easements.

Sewage treatment works

Public land in the Parish of Newmerella is used for the treatment of sewage from Orbost.

- P3** That the area of 259 ha shown on Map 1 continue to be used and reserved for treatment of sewage.

Marlo aerodrome

The aerodrome approximately 5 miles east of Marlo is situated on public land.

- P4** That the area of approximately 450 ha shown on Map 1 continue to be used and reserved for aerodrome purposes. This area supports a major remnant of the native vegetation of the Marlo plains, which should be protected to the extent consistent with the management of the aerodrome.

Maramingo rubbish tip

A small area near the intersection of the Princes Highway and the Wangarabell Road is used for rubbish disposal and gravel extraction.

- P5** That the area of 4 ha shown on Map 1 be used as a rubbish tip. Extraction of gravel may continue.

Fire lookouts

Fire lookouts are important links in the fire-control network.

- P6** That a minimum area be reserved around the fire lookout installations on Mounts Delegate, Buck, Raymond, and Bemm, and on Maramingo Hill and Noorinbee Lookout, which should continue to be managed by the Forests Commission.

Ports

Mallacoota Inlet and the Snowy River are proclaimed ports under the control of the Ports and Harbors Division, Public Works Department. The waters of Mallacoota Inlet have considerable value for recreation and also have nature conservation value. The Public Works Department should consult with the National Parks Service to ensure that recreation and nature conservation values associated with the Croajingalong National Park are protected. Lakes Curlip and Corringale, which form part of the Port of Snowy River, have value for nature conservation and recreation, and the Public Works Department should consult with the Fisheries and Wildlife Division to ensure that recreation and nature conservation values associated with these areas are protected.

Navigation aids

- P7** That the minimum area necessary for access to and maintenance of navigation aids 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 Ports and Harbors Division have the right to occupy a minimum area around the aid and provide lines of sight.

Trigonometrical stations

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

- P8** That the minimum area necessary for survey purposes be temporarily reserved around trigonometrical stations on public land where it would otherwise remain as unreserved Crown land and, where other forms of public land tenure apply, that the Department of Crown Lands and Survey have the right to occupy a minimum area around the station and provide lines of sight.

Other utility areas

- P9** That, for areas that are at present reserved and used for utility purposes such as public buildings, municipal depots, cemeteries, schools, etc., existing legal uses and tenure continue.

Q. 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. Some land in the townships of Marlo, Cann River, and Murrumbidgee has been recommended for bushland reserves and recreation reserves.

In general, all public land in townships other than those areas which have been specifically reserved should remain as unreserved Crown land to meet future requirements. By recommending that public land adjacent to the townships of Bemm River, Cann River, and Murrumbidgee be uncommitted, Council has left open the option for possible future expansion of these towns.

Cape Conran

To meet the demand for additional coastal settlements providing accommodation for tourists in a coastal environment, Cape Conran is an outstanding site, providing an environment different from those of other coastal towns in East Gippsland. Such a seaside village would be intended to cater for holiday-makers, and many of the facilities and services required by a permanent population could be located in Marlo or elsewhere. As the township site does not contain any permanent buildings or freehold land, Cape Conran provides an opportunity for planned development from the beginning.

Recommendations

Q1 Cape Conran

- (a) That the Department of Crown Lands and Survey investigate a site at Cape Conran, other than on the coastal reserve, that would be suitable for the establishment of a seaside village.
- (b) That, before any development begins, the appropriate authorities prepare a comprehensive plan, taking into account environmental and pollution factors.
- (c) That all residences and holiday-home sites be confined to the village site and not be located on the adjacent coastal reserve, and that existing permissive occupancies be terminated and structures removed so that the relevant area is fully available for public use by 1985.

Q2 Point Hicks

That an area of approximately 75 ha at Point Hicks be temporarily reserved for possible development associated with the Croajingalong National Park.

Note : Any such development should be undertaken only with the approval of the National Parks Service (see Recommendation A1).

Q3 Gipsy Point

That the area of approximately 60 ha shown on Map 1 be used for township purposes and be dealt with in accordance with the provisions of the *Land Act 1958*.

R. 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 substantial 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 demands, 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.

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

It should be noted that the railway-sleeper industry in this region depends wholly on supplies from uncommitted land.

Recommendation

R1 That the land (203,000 ha) shown on Map 1 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, and military training) 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 protected forest under the provisions of the *Forests Act* 1958.

Special features

- (i) Goolengook River (2,900 ha)
The Council recommends that, contrary to (b) above, the whole of the land in this category be withheld from logging or new roading until 1985, when it is expected that the use of this area will be reviewed.
The area contains appreciable quantities of mature timber and also has high nature conservation values. It contains examples of shining gum, brown barrel, alpine ash, and messmate-gum open forest, and montane and lowland closed forest.
- (ii) Gelantipy Plateau/Bowen Range (23,000 ha)
The Council recommends that, contrary to (b) above, the whole of the land in this category be withheld from logging or new roading, other than that required for fire protection, until reviewed by the Council. This area contains appreciable quantities of mature timber and also has high recreation and nature conservation values (see Recommendation A3).
- (iii) Hard-to-Seek Creek and Wingan River (14,000 ha)
The Council recommends consultation between the Department of Crown Lands and Survey, the Forests Commission of Victoria, and the National Parks Service regarding forest operations, including provision of access, so that the values of the adjacent Croajingalong National Park and Benedore River reference area are adequately protected.
- (iv) Teal, David, and Dowell Creeks catchments (1,700 ha)
The habitat of bass, grayling, mullet, bream, and other fish should be protected by excluding logging from a strip 100 metres from the banks of Teal Creek and strips of 20 or 40 metres from each bank of minor or major streams respectively elsewhere.
- (v) Snowy River
Land should be conserved along the Snowy River between Lucas Point and Bete Bolong.
- (vi) Serpentine Creek
The area where the Yalmy Road crosses Serpentine Creek contains many orchid species, including the uncommon leafy greenhood (*Pterostylis cucullata*).
- (vii) Yeerung River
Heaths and woodland between the Cabbage Tree Creek—Cape Conran Road and the Manorina—Bemm River Road are valuable habitat for flora and fauna, including the smoky mouse, one of Victoria's two endemic mammal species.
- (viii) Chandlers Creek
The catchments of Chandlers Creek and Survey Camp Creek contain rare plant species, including lacy wedge-fern and green midge-orchid.
- (ix) Reed-bed Creek
Swamps along Reed-bed Creek are valuable for flora.
- (x) Reedy Creek
The swamps associated with Reedy Creek are valuable for nature conservation and contain rare plant species, including the guinea flower (*Hibbertia rufa*), rush fringe-lily, and leafless tongue orchid.

S. OTHER RESERVES AND PUBLIC LAND

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

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

Recommendation

- S1** That for small areas of public land not specifically mentioned in these recommendations, existing legal uses and tenure continue
that, where the land is not used for a specific purpose at present, such areas be used in a way that will not preclude their reservation in the future for as-yet-unknown public purposes
and that they be managed as if they were uncommitted land.

SUPPLEMENT I

THE WILDERNESS CONCEPT

The concept of wilderness ("an uncultivated and uninhabited tract"—Oxford English Dictionary) is at present receiving attention in Australia, after having been established by legislation in the United States of America in 1964 (*The Wilderness Act*).

The wilderness experience involves the perception of being part of nature, of an environment unaltered by human intervention, of isolation, and of being exposed to the challenge of the elements. In a wilderness, Man should function as a part of the natural systems, and on equal terms with nature.

The main elements of the appeal of wilderness are :

- * spiritual refreshment and an awareness of solitude arising from close contact with the uninhabited, undisturbed natural environment
- * the knowledge that large wild natural areas, untouched by man, exist and can be experienced
- * refuge from the pressures, sights, and sounds of modern urban life
- * the adventure and challenge of putting one's powers of endurance and self-reliance to the test in an undisturbed natural environment.

Wilderness, therefore, requires land that still retains its primeval character, and is without human modification or habitation. It is used for recreation of an unconfined nature. To preserve the wilderness values it is necessary to protect the natural ecosystems and maintain the landscape in an undisturbed state. Because of this requirement, a wilderness will have considerable value for nature conservation.

Scenic grandeur enhances the value of an area, but is not an essential requirement of the type of experience the Council is endeavouring to provide in reserving land specifically as wilderness areas.

To fulfil the uses for which they are intended, wilderness areas must be large. They should enable a walking trip of at least several days to be undertaken within them. This spaciousness is the essential characteristic distinguishing wilderness areas from the many other smaller undisturbed or primitive areas that may be found as "islands" even in land that has been developed for more intensive uses.

Large, essentially undisturbed areas are a very scarce resource, and are becoming scarcer as the road and fire-trail network on public land is extended and upgraded.

For this reason, Victoria can probably accommodate only two or at the most three wilderness areas. These could include one in the rugged and heavily forested mountain region, preferably covering from sub-alpine to foothill and riparian environments, and one in the semi-arid Mallee country. They would be the last places in Victoria where it is possible to spend several days in wild challenging conditions without hearing or seeing evidence of human activity. The Council stresses that few such areas remain in the State, and it must be expected that they will gradually diminish in size unless reserved specifically to retain this wilderness quality.

Types of Wilderness Experience

A wilderness experience of some kind will be available in many different places. For some people, a short walk in part of a State park (or even a regional park) may provide it. Others need a much larger expanse of territory, requiring a number of days to traverse, before they can appreciate it fully. For the former group, therefore, particularly those for whom an essential part of the experience is associated with scenic grandeur and views across large expanses of mountainous country, zones within areas reserved for some other primary purpose will provide some wilderness experiences. For many, the fact that some of the most magnificent scenery in the State contains an obvious man-modified component does not detract from it. Such wilderness experiences, however, may be relatively brief, as people will come into contact with others because of the intensity of recreational use. Council is thus aware that many people can find all they seek within areas not specifically reserved as wilderness, but considers it necessary to reserve some areas specifically as wilderness areas, where the emphasis is on isolation and lack of disturbance, that can provide a wilderness experience lasting for several days at a time.

Use and Management of Wilderness Areas

Wilderness use may include such activities as canoeing, hiking, rock-climbing, caving, fishing, and cross-country skiing. Vehicles (other than those essential for management), timber production, grazing and mining would be excluded from wilderness areas.

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

Wildfires, however caused, must be prevented from threatening life, property, and natural resources in the State, and the measures necessary to control them must be taken in a wilderness area as in any other. Some pre-suppression measures such as maintenance of fire-access tracks and protective burning will be required, at least in areas of strategic importance for fire control. In the Mallee environment there may be no need for fuel-reduction burning within a wilderness area.

Vehicular use of existing tracks, where they occur, should not be permitted except for essential management operations. By careful maintenance, many tracks can continue to be passable for fire-fighting, rescue, and management vehicles, without clearing all vegetation. Construction of helipads may be an alternative to maintaining all of an extensive track system.

At least in a buffer near the edges of the wilderness area, it will often be necessary to exercise careful vermin and noxious weed control, to ensure that adjoining land is not threatened by pest species from within the area, and conversely that these do not invade the area from outside.

Users of wilderness areas must be prepared to face difficult and challenging conditions, and Council stresses the need to bring to the attention of the public the potential hazards associated with the use of these areas. In general, it is to be expected that the lack of vehicle access and the remote location of the recommended wilderness areas will ensure that the users are, in fact, self-reliant and capable of looking after themselves.

SUPPLEMENT 2

**PROPOSED PULPWOOD INDUSTRY—EAST GIPPSLAND
STUDY AREA**

In the course of formulating its proposed recommendations for the East Gippsland Study Area, the Council found it necessary to appoint a committee drawn from its members to investigate proposals for a pulp industry based on pulpwood resources in the area. The essential findings of this committee are set out below. Its recommendations were approved by Council and are incorporated in the Timber Production section of this report.

A. Wood Pulp Industry—Australia

The pulp and paper industry must be considered on a national basis, as the bulk of production takes place in some States and pulp and products are transported to others.

Four major types of industries in Australia rely substantially on eucalypt pulpwood in Australia. These are the packaging and industrial paper, the newsprint, the printing and writing papers, and the chip export industries.

Brief outlines of these industries are included in Appendix (i). The most feasible alternative industries that could utilize the East Gippsland eucalypt pulpwood resource would appear to be production of kraft pulp (for manufacture into packaging paper and other industrial papers) or the production of wood chips (which may then be exported).

Australia consumed 720 000 tonnes of packaging and industrial paper in 1970, and growth has been about 6 to 7% per annum since then. This is expected to decrease to about 4.4% by 1980 (1). About 48% of this production is based on recycled paper, 18% on imported pulp, and 34% on pulp produced from Australian-grown wood.

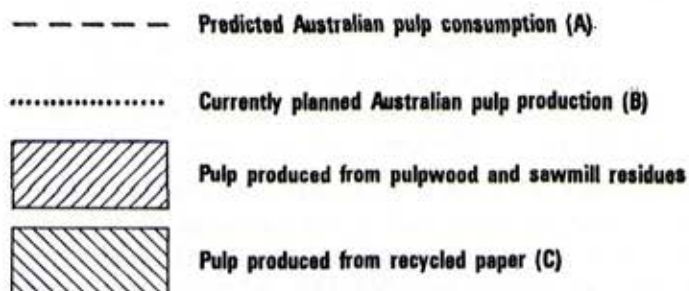
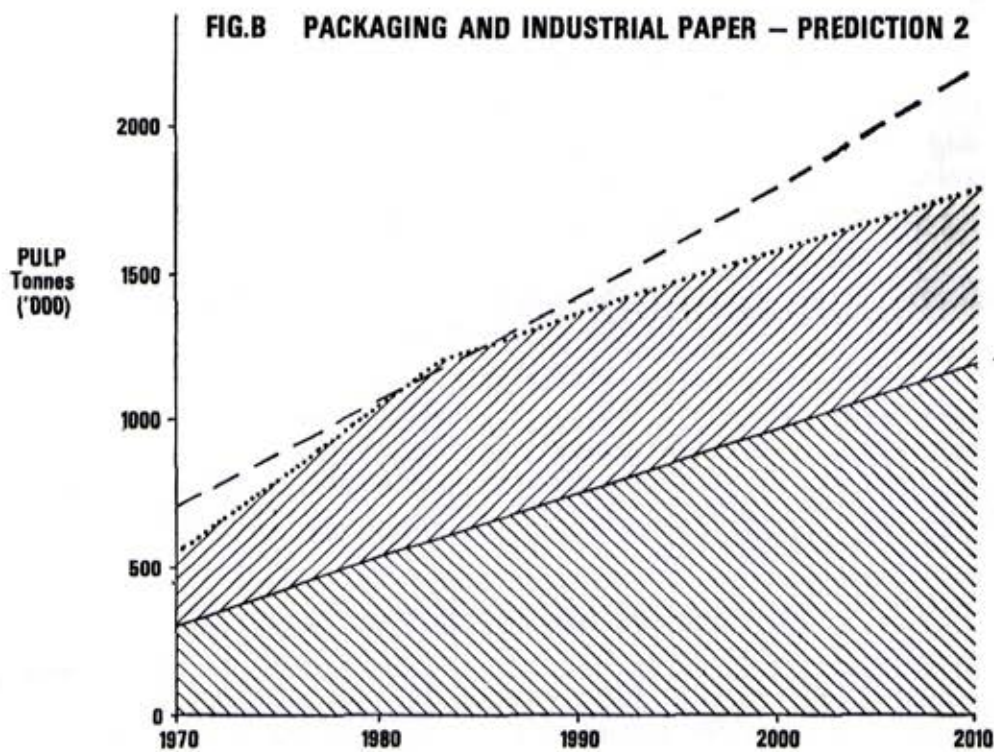
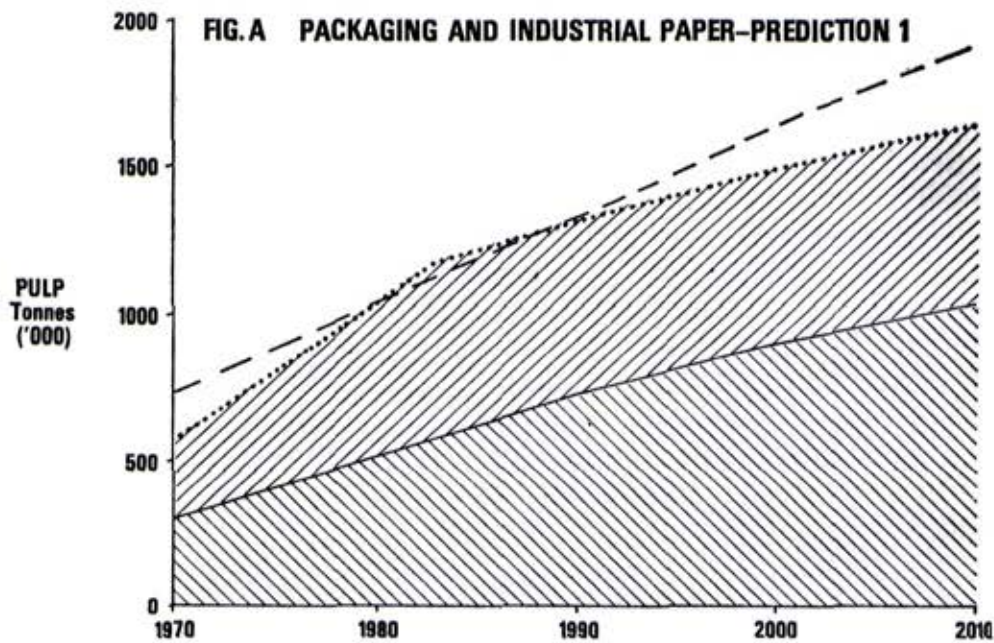
From predictions for 2010, of a population between 16.5 million and 19 million (2) and a *per capita* consumption of 0.116 tonnes per annum (3), the demand for packaging and industrial paper is expected to be between 1.9 and 2.2 million tonnes per annum by 2010.

Current and firmly planned expansion of existing Australian pulp mills supplying this market should enable production of about 600 000 tonnes of pulp per annum by 1983.

The upper and lower Australian demand projections for pulp for packaging and industrial papers, and the existing and firmly planned expansion of existing Australian pulp mills supplying this market, are depicted in Figures A and B. It is feasible that up to 55% of total paper production could be based on recycled paper, as indicated in these Figures.

Considering the lower population projections (Prediction 1), self-sufficiency in raw material supplies for packaging and industrial paper should be achieved by about 1980. A surplus is indicated until about 1990, but after this time a deficit is predicted, rising to 270 000 tonnes per annum by 2010.

Prediction 2, based on the higher population projections, indicates that Australia could be self-sufficient from about 1981 to 1985, but after this time an increasing deficit is predicted, rising to 400 000 tonnes per annum by 2010.



(A) Derived by equating predicted pulp consumption with predicted paper consumption

(B) Pulp production from pulpwood and sawmill residues of 600,000 tonnes/annum by 1983

(C) FORWOOD predictions of recycling proportions (Reference 3)

Imports could meet some of this deficit in the future. Arguments have been raised against a policy of self-sufficiency for a trading nation with substantial wood reserves, such as Australia (4). Imports of pulp in 1970 amounted to 18 per cent. of the total required.

An additional mill producing 180 000 tonnes of pulp annually (enabling the production of about the same amount of paper products) would require about 750 000 tonnes of pulpwood and chips per annum. The minimum economic size of a kraft chemical mill has been estimated to be approximately 180 000 tonnes per annum (5, 6).

It is predicted that a world-wide shortage of pulp and chips will continue, leading to an estimated export opportunity of 8 million tonnes per annum between 1990 and 2010 (3). In 1974-75, 2.5 million tonnes were exported from Australia—2 million tonnes from Tasmania and 0.5 million tonnes from New South Wales (7).

B. Australian Pulpwood Resources

Substantial eucalypt pulpwood resources exist in several localities in Australia. In some areas, pulpwood-using industries are associated with these and are shown in Appendix (ii). It is apparent that additional eucalypt pulp could be produced by :

- (i) expanding existing pulp mill capacities at some localities ;
- (ii) replacing present wood-chip export industries by woodpulp industries in Tasmania, southern New South Wales, and Western Australia ;
- (iii) utilizing untapped resources in East Gippsland and northern New South Wales.

C. Industries Using Eucalypt Pulpwood and or Chips Obtained from Victoria or Southern New South Wales

Four large industries use eucalypts for pulpwood and for chips in Victoria and southern New South Wales : A.P.M.'s pulp mills at Maryvale and Smorgon's mills at Melbourne produce pulp for manufacture into packaging and industrial papers ; Hardboards Australia at Bacchus Marsh manufactures hardboard from supplies of pulpwood and sawlog residues ; Harris-Daishowa exports chips from Eden. Further details appear in Appendix (iii).

D. Pulpwood Resource in East Gippsland

Apart from the areas covered by existing supply agreements, the largest potential source of eucalypt pulpwood in Victoria is in the East Gippsland region, to the east and north-east of the A.P.M. Forest Area (as defined by legislation). This region includes the study area.

The region comprises some 1.5 million hectares of State forest and supports annual sawlog allocations of 533 000 m³, which amounts to more than 40% of the Victorian hardwood total. This proportion is expected to decline with the progressive use of regrowth eucalypt forest and softwood plantations for sawlog supplies.

It is believed that the area could sustain an annual yield of about 800 000 m³ of green pulpwood from the residue of trees felled for sawlogs and from trees not suitable for sawlogs and not required for other purposes, such as seed trees and trees for faunal habitat. This includes approximately 600 000 m³ from reserved forest and protected forest within the East Gippsland study area.

The study area figure is based on cutting an estimated present standing pulpwood volume of 43 400 000 m³ harvested over 70 years. This assumes that the standing pulpwood volume remains at the same level over this period of time and that pulpwood and sawlog utilization standards remain the same. In preparing this estimate of volume, the Forests Commission has excluded areas where slopes exceed 30°, unproductive areas such as grassland and heathland, all forest with a stand top height less than 18 metres for coastal and low-foothill forest, and elsewhere all stands less than 28 metres stand top height. Species unacceptable for pulpwood have been excluded from calculations. No allowances have been made for areas reserved along streams or for residual trees left as seed or habitat trees. Pulpwood volumes in regrowth stands have not been included in the estimates, but eventually these areas would contribute to the total availability of pulpwood.

Under the agreement with A.P.M., up to 20% of the minimum annual supply may have to be met from outside the forest area. This quantity will rise from 58 000 m³ in 1975 to a level of 153 000 m³ by 1982–83. This requirement could be met partly from north-eastern Victoria, but, in the main, would have to be obtained from East Gippsland.

Based on current sawlog allocations, a volume of approximately 155 000 m³ of slabs and edgings from sawmills in the East Gippsland area is potentially available for wood pulp, including chips currently carted to Eden from Victorian mills.

E. Potential Pulpwood-based Industries for East Gippsland

The Victorian Government has indicated its interest in the establishment of a pulpwood-based industry in the East Gippsland area, to stimulate the local economy and to foster economically viable decentralized development. It has received a number of requests for long-term rights for utilization of this pulpwood resource.

F. Alternative Proposals

A number of alternative strategies for utilization of the pulpwood resource in East Gippsland and for alternative supply sources should be taken into account when recommending land uses in the study area. These are discussed below.

1. Manufacture of pulp in East Gippsland based on the local pulpwood resource.

This would involve the establishment of a pulp mill in the area, probably in the Orbost locality. A kraft mill based on an annual intake of about 750 000 tonnes of raw material (pulpwood and sawmill residues) would be a likely possibility.

2. Export of wood chips

A large market for wood chips is predicted in the future. A chipping mill sited at Orbost, or an expansion of the mill at Eden, could be contemplated. The current industry at Eden provides one guide to the minimum economic size and life of a wood-chip mill.

The Eden mill processed 220 000 tonnes of pulpwood in 1971. Since then, intake has expanded to an anticipated level of 570 000 tonnes and 137 000 tonnes of chips from sawmill residues in 1975. A new chip mill will lift production further. This

industry has a guaranteed minimum supply of 530 000 tonnes per annum from State forests until 1989 and appears to be economically viable (8). Thus, on the basis of the New South Wales experience, it appears that an alternative way to utilize pulpwood resources from East Gippsland could be to establish a chip industry requiring about 500 000 tonnes of pulpwood each year.

3. Linking East Gippsland and southern New South Wales resources to support a large pulp mill or integrated pulp and paper mills in East Gippsland

It is estimated that a pulp mill can economically draw on pulpwood supplies from land within a radius of up to 150 kilometres (9). If this criterion is applied to a pulp mill at Orbost, estimated resources in State forests could maintain an annual supply of about 1 300 000 tonnes of wood. This could comprise about 180 000 tonnes of chips from sawmill waste, 630 000 tonnes of pulpwood from East Gippsland (A.P.M.'s annual supply requirements of up to 164 000 tonnes from outside its forest area is excluded), and about 500 000 tonnes from New South Wales, if this resource, at present exported as chips, is diverted to Orbost. An annual supply of 1 300 000 tonnes is well in excess of the minimum required at present for an economically viable kraft pulp mill or integrated pulp and paper mills.

A pulp mill at Eden could draw on at least the same order of supplies from State forest in East Gippsland and New South Wales.

4. Reduced rotations with eucalypts

Managing native forests on a rotation of 40 years instead of 70 years would increase productivity of pulpwood, but would not contribute to sawlog supplies. Growth rates of about 5 m³ per hectare per annum could be expected from management of coastal foothill forests on a 40-year rotation.

A net area of about 18 000 ha of suitable land would be required to produce 90 000 m³ per annum, that is, about 15% of 600 000 m³ per annum.

In New South Wales the Forestry Commission estimates that annual production will increase from about 618 000 m³ per annum to 1 100 000 m³ per annum in about 35 years' time. That would be after the present old growth has been cut over completely, with supplies based on a 40-year rotation.

The use of selected species and application of fertilizer would increase yields even further. Short rotations and other intensive production methods, however, increase the environmental effects.

5. Softwood plantations

Softwood plantations would produce significantly greater volumes of pulpwood in a short time span, when compared with native forest. They would also introduce an advantageous element of versatility into pulp production. An average softwood plantation in East Gippsland is likely to produce about 18 m³ of wood per hectare per annum. If softwood replaces productive silvertop forests (production about 5 m³ per hectare per annum), then the net gain is 13 m³ per hectare per annum. Production of an extra 90 000 m³ of green pulpwood annually would require a net area of about 7000 ha. Sufficient suitable public land is available and could be used for this purpose.

6. *Use of other pulp resources in Victoria*

A.P.M. has a guaranteed supply outside its forest area of up to 58 000 m³ in 1975–76, increasing to 153 000 m³ by 1982–83. The agreement was based on trends estimated in 1973. If A.P.M.'s expansion is slower than planned, or if part of the pulpwood supply from outside the A.P.M. forest area can be obtained from areas other than East Gippsland, an additional pulpwood resource would become available to supplement supplies for an East Gippsland industry.

It may, in the future, prove economic to transport some of the pulpwood resources of north-eastern Victoria to either Maryvale or Orbost.

7. *Recycling of waste paper*

Waste paper is used mainly in the production of pulp for packaging and industrial papers. This is expected to remain at about 50% of the raw material used to make these products. Cost of transport and ease of collection are key factors in the economic use of waste paper. Because of these factors, mills at Maryvale and West Footscray (Smorgon's) are better situated to utilize recycled paper, rather than one situated at Orbost. Accordingly, the recycling of waste paper could not be expected to be a major component of raw material supplying an Orbost mill.

G. **Effects of a Pulpwood-based Industry in East Gippsland**

1. *Economic effects*

(a) *Regional development*

The timber industry currently employs about 600 to 700 persons in sawmills, in the forests, and in transporting raw material. It is estimated that a pulpwood-based industry would offer additional direct employment for about the same number, and this doubling of employment capacity would greatly stimulate the regional economy and assist decentralization to some degree.

(b) *Economic benefits*

More economic and effective forest management would ensue, due to increased returns from an otherwise unused timber resource, creation of more favourable regeneration conditions, and reduction of the fire hazard. These economic benefits accrue to the community at large.

2. *Environmental effects*

The establishment of a pulpwood industry of the size proposed would require commitment of a major portion of East Gippsland forests for one primary use—sawlog and pulpwood production—which would close some options for its use in the future. The establishment of a pulpwood industry of the size proposed would have significant environmental effects due to the mill itself, and to the forest operations necessary to supply it.

Some of the possible environmental effects of a pulpwood-based industry are discussed below.

(a) *Mill*

The mill could require in the order of 70 megalitres of water per day, thus involving diversions from the Snowy River and possibly the Brodribb River. If the Snowy River alone were to be utilized, then some impoundment would be necessary to

ensure supplies during minimum stream flows. This could affect availability of water for irrigation on the Orbost flats and for other purposes.

Bleached kraft pulp mills are not large energy consumers, but some energy would have to be transported to the region in one form or another. Electricity or natural gas are two alternatives. Pulp mill effluents, which constitute varying pollution hazards according to the type of mill and stage of pulp processing, are subject to greater controls in some overseas countries than presently exist in Victoria. Pollution is both organic (from fibre wastes) and inorganic. Effluent disposal and air emissions would have to meet Environment Protection Authority requirements.

(b) Forest

The East Gippsland region is one of great beauty, with a large range of land types that have been little disturbed in the past, relative to other areas of the State. The region contains a great richness and diversity of flora and fauna. The quality of water in the streams is excellent. Soil erosion is generally limited in extent throughout the study area, but is an important potential hazard.

The introduction of a large-scale integrated sawlog-pulpwood harvesting operation will cause significant changes to the forest environment. These can be minimized by adoption and implementation of adequate principles and guidelines.

It should be recognized that pulpwood harvesting is one aspect of wood production in a whole range of harvesting procedures. As most pulpwood is obtained from the same areas as sawlogs, the operations such as roading, felling, snigging, and regeneration treatment are common to both sawlog and pulpwood procurement, and the main difference in integrated operations is in the intensity of utilization of a given area. Integrated operations differ from some intensive harvesting operations by the removal of wood from the site that would otherwise have been left as a cull tree, or as sawlog residue that would have been burnt or left to decay.

The precise nature and significance of any change can only be determined by long-term research. Distinguishing between the effects of pulpwood/sawlog harvesting and sawlog harvesting would require considerable research. Some of the environmental effects are mentioned briefly below.

- (i) Soil compaction, disturbance, and erosion due to roading, felling, snigging, and other forest operations.
- (ii) Soil nutrient losses, changes to patterns of nutrient recycling, and deterioration of soil structure.
- (iii) Alteration of stream characteristics, such as quality, quantity, and flow regime. This may affect stream ecology and uses, such as fresh-water angling and other forms of recreation.
- (iv) Changes in species composition of vegetation associations. This may be caused by obvious means, such as resowing with alien tree species. Other forest management practices, such as regeneration burning or fertilizer applications, may have considerable effect on the composition of the understorey.
- (v) Changes in gene pools of both flora and fauna. It is possible that forestry practices of the type envisaged could reduce the genetic diversity of the East Gippsland flora and fauna populations. Associated with a reduction in genetic

diversity of a species is the decrease in its adaptability to changing environments in the long term and loss of exploitable germ-plasm available to future plant or animal breeders.

- (vi) Changes in fauna populations by variations in the quality and quantity of available habitat, for example, alterations to structure and composition of vegetation. Local populations of some wildlife species may be severely reduced by loss of mature trees or decreased diversity of flowering plants.
- (vii) Creation of instability in the environment leading to substantial and irreversible changes because of the introduction of pest plants or animals, or other injurious agents, such as cinnamon fungus, or by altering the balance between a host and the organisms that attack it.
- (viii) Alteration of aesthetic appearance and recreational characteristics of the forest. Harvesting may have short-term visual effects, but at the same time, forest roads provide increased opportunities for forest recreation.

It is not possible to predict the exact nature, extent, or significance of these changes on the basis of present knowledge. An environmental-effects assessment is essential before any commitment to industry is authorized. The Forests Commission is gathering data—based on past and current experience, directly and through other interested and qualified bodies—on the likely environmental effects. Studies on a few experimental sites in the study area, involving integrated sawlog-pulpwood operations, have been approved by the Government. The full extent and effect of changes will be realized only through long-term research.

H. Land-use Implications

The Forests Commission has estimated that all productive public land in the study area could support a sustained annual supply of 600 000 m³, based on a 70-year rotation.

Of all the alternative strategies to utilize the pulpwood resource, a kraft pulpmill at Orbost would require the greatest volume, and the Forests Commission considers that 600 000 m³ per annum would be the minimum amount of pulpwood necessary for an economically viable mill. Therefore, the minimum amount of land required in the East Gippsland study area would be all the land carrying productive forest, if other alternative supply strategies were discounted. This would preclude any other recommendation that assigns another primary use to land, with which intensive timber production is incompatible.

There are strong arguments for areas for parks, reference, flora and fauna, education, and other primary uses, which must be considered when deciding on land-use recommendations.

The following table outlines the estimated pulpwood resources contained for some areas in various land-use categories. Parks remove the option to harvest 10·6% of the pulpwood resource. The uncommitted land near the Bowen Range and Mount Ellery, with its particular land-use stipulations, makes it possible to retain the option of including another 3·1% of the resource in a pulpwood supply area while, at the same time, maintaining options for inclusion into a park or other type of reserve where timber harvesting is not permitted.

Proposed land-use category.	Area.		Pulpwood volume.*	
	Total (ha).	Percentage of public land.	000's tonnes.	Percentage of pulpwood resource in study area.
1. Croajingalong Park	81 000	9.9	4 100	8.9
2. Coopracambra Park	13 000	1.6	510	1.1
3. Tingaringy Park	17 000	2.1	90	0.2
4. Snowy River Park	25 000	3.0	170	0.4
(Sub-total)	136 000	16.6	4 870	10.6
5. Bowen (uncommitted)	23 000	2.8	950	2.1
6. Ellery (uncommitted land)	2 900	0.4	420	1.0
Grand total	161 900	19.8	6 240	13.7

* These resource estimates are provisional only.

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- (9) FORESTRY AND WOOD-BASED INDUSTRIES DEVELOPMENT CONFERENCE (FORWOOD)—"Report of Panel 6—Marketing." (Australian Government Publishing Service : Canberra, 1975)

APPENDIX (i)

INDUSTRIES RELYING ON SUBSTANTIAL SUPPLIES OF EUCALYPT PULPWOOD

Packaging and industrial paper

Australian Paper Manufacturers Ltd. (A.P.M.) supplies about 75% of the Australian market, Smorgon Consolidated Industries Ltd. (S.C.I.) about 10% and A.P.P.M. (in Tasmania) about 5%. About 10% is imported (1). A.P.M. obtains its raw material from several sources: about 50% comes from recycled paper, 15% from imported pulp, and 35% from pulp manufactured from both eucalypt and softwood (2). Two-thirds of the pulp is manufactured at Maryvale, Victoria.

Newsprint

Australian Newsprint Manufacturers Ltd. (A.N.M.) operating a mill at Boyer, Tasmania, is the sole Australian producer of newsprint. In 1972-73 it produced 196 000 tonnes (1), which represents about one-third of Australian consumption. Present capacity is 210 000 tonnes per annum (1).

Future consumption is expected to increase to between 0.94 and 1.1 million tonnes by 2010, based on populations of 16.5 and 19 million and *per capita* consumption of 0.057 tonnes in that year (0.038 tonnes in 1970). This leaves a considerable deficit in the pulp required to lift Australian production levels to meet the predicted consumption.

Expansion of the mill at Boyer to meet the increased demands may not be as economic as the establishment of a new mill because of the limits of the forest resource, and industrial and transportation problems. The shortfall is likely to be between 0.94 and 1.03 million tonnes by 2010.

The minimum economic size for a pulp mill appears to be one with a production capacity of about 220 000 tonnes of newsprint per annum, with a pulpwood requirement of about 500 000 per annum (3). The Boyer mill utilizes mature ash-type eucalypts and, at present, it does not appear technically feasible to produce groundwood pulp from the mix of eucalypt species growing in East Gippsland.

Printing and writing papers.

Associated Pulp and Paper Mills Ltd. (A.P.P.M.) is the main Australian producer of printing and writing papers. Total Australian production currently meets 50% of consumption, which in 1970 totalled 241 000 tonnes (1). By 2010 domestic consumption is predicted to rise to between 728 000 and 838 000 tonnes (4), based on forecasts of population and *per capita* consumption from previously quoted sources.

Export pulp and chips

A predicted world-wide shortage of pulp and chips should lead to an estimated export opportunity of 8 million tonnes per annum by 1990 (4).

At present about 2.5 million tonnes of chips are exported per annum. Harris-Daishowa at Eden exported 0.5 million tonnes in 1974-75, and 2.0 million tonnes was exported from Tasmania (5). Large-scale export of eucalypt wood chips will begin from Manjimup (Western Australia) this year (1976).

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APPENDIX (ii)

MAJOR EUCALYPT PULPWOOD RESOURCES IN AUSTRALIA

The table below indicates the localities, areas of productive State forest, and pulpwood-using industries, based substantially on eucalypt pulpwood, associated with each region (1).

MAJOR AUSTRALIAN CENTRES WITH SUBSTANTIAL EUCALYPT PULPWOOD RESOURCES

Locality.	Region.	Area of productive State forest (ha).		
		Native forest.	Plantation.	Pulpwood-using industries.
1. N.S.W. north coast	12. Coffs ..	362 700	3 800	None
2. N.S.W. south coast	23. Eden and 21. (part) Nowra	186 600	3 600+	Harris-Daishowa (export chips)
3. Victoria (excluding Western Region)	26, 27, 28, 29 30 and 31	1 856 700	44 000	A.P.M. (packaging) S.C.I. (packaging) H.A.L. (hardboard) A.P.P.M. (fine papers) A.P.P.M. (export chips) Northern wood chips (export chips—private land)
4. Mid-north and north-eastern Tas- mania	33. ..	275 700	10 900	A.N.M. (newsprint) T.P.F.H. (export and chips) A.P.M. (packaging) A.P.P.M. (fine papers) (Export chips in near future)
5. Central east coast Tasmania ..	34. Devonport, Georgetown	299 100	3 300	
6. South-eastern Tasmania	35. Huonville ..	130 600	100	
7. North-western Tasmania	37. Burnie ..	205 000	3 700	
8. South-western Western Australia ..	43 and 44 Manjimup	3 025 500	40 400	

REFERENCE

- (1) FORESTRY AND WOOD-BASED INDUSTRIES DEVELOPMENT CONFERENCE (FORWOOD)—“Report of Panel 2—Forest Resources.” (Australian Government Publishing Service : Canberra, 1974)

APPENDIX (iii)

INDUSTRIES USING EUCALYPT PULPWOOD AND/OR CHIPS OBTAINED FROM VICTORIA OR SOUTHERN NEW SOUTH WALES

(a) Australian Paper Manufacturers Ltd. (A.P.M.)

A.P.M.'s pulp mills at Maryvale produce about 175 000 tonnes of pulp per annum. This requires an annual supply of about 630 000 tonnes of pulpwood. A new paper mill is scheduled for completion next year. The *Forests (Wood Pulp Agreements) Act 1974* has provided for increased eucalypt supplies, rising from a minimum annual supply of 290 000 m³ of eucalypt pulpwood in 1975-76 to 765 000 m³ from 1982-83 onwards.

These supplies are to come mainly from the A.P.M. forest area as defined by legislation, but up to 20% of the minimum annual supply may be met from outside this area; that is, 58 000 m³ in 1975-76, increasing to 153 000 m³ by 1982-83. Softwood requirements will be met from an expansion of company plantations and from Forests Commission plantations, as provided for by the legislation mentioned above. Wood chips from sawmill residues will also supplement supplies.

(b) Smorgon Consolidated Industries Pty. Ltd. (S.C.I.)

This company also pulps eucalypts and softwoods for manufacture into packaging paper and paper board. In 1972-73 S.C.I. produced 92 000 tonnes of paper.

Current total productive capacity is 97 000 tonnes of paper per annum, and the commissioning of a new paper machine in the near future will increase the capacity to 157 000 tonnes. The current annual supply level from State forest is about 60 000 m³, but requirements will increase to about 100 000 m³ when the new paper machine is operating.

To date, the Otway State Forest has been the main source of eucalypt supplies. Increased requirements could be met from forests on public land to the north of Melbourne.

(c) Hardboards Australia Ltd. (H.A.L.)

This company manufactures hardboard from eucalypt pulpwood and sawmill residue. This material is mostly derived from the Wombat Forest and adjacent public land. Supplies of up to 70 000 tonnes of pulpwood per annum are guaranteed by legislation.

(d) Harris-Daishowa (Australia) Pty. Ltd.

An agreement between this company and the New South Wales Government provided for a supply of 530 000 tonnes of wood chips per annum from Crown forests up until December, 1989. Within the Eden pulpwood supply area, the New South Wales Forestry Commission plans to manage some 182 000 ha of eucalypt forest on a 40-year pulpwood rotation, which is estimated to produce 618 000 m³ of pulpwood per annum until the area has been completely cut over and then produce about 1 100 000 m³ per annum from the regrowth forest.

The company plans to process about 700 000 tonnes of wood in 1975. Of this, 63% (440 000 tonnes) will be from New South Wales State forest, 9% (130 000 tonnes) from private property clearing (a non-sustainable supply source), 12% (83 000 tonnes) from residues from Victorian sawmills, and 7% (50 000 tonnes) from New South Wales sawmills (1).

The New South Wales Government, in its agreement with the company, indicated its desire to have the wood chips converted to pulp locally, in due course, rather than exported in an unprocessed form. The company has applied to the Victorian Government for substantial supplies of pulpwood from Victorian public land to allow expansion of the Eden export project and, if feasible, the construction of a pulp mill. However, there are problems in supplying enough water (a minimum-sized bleached kraft pulp mill requires 70 megalitres per day) to a mill sited at Eden, and Orbost has been considered as a possible alternative site.

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- (1) SCOTT, W. D.—“A Study of the Environmental, Economic and Sociological Consequences of the Woodchip Operations in Eden, New South Wales.” (W. D. Scott and Co. Pty. Ltd.: 1975)

MAPS

BUSHLAND RESERVE G3
MALLACOOTA

MAP No.2



PARISH OF MALLACOOTA

5

Shady

27 A

G3

15
16
17
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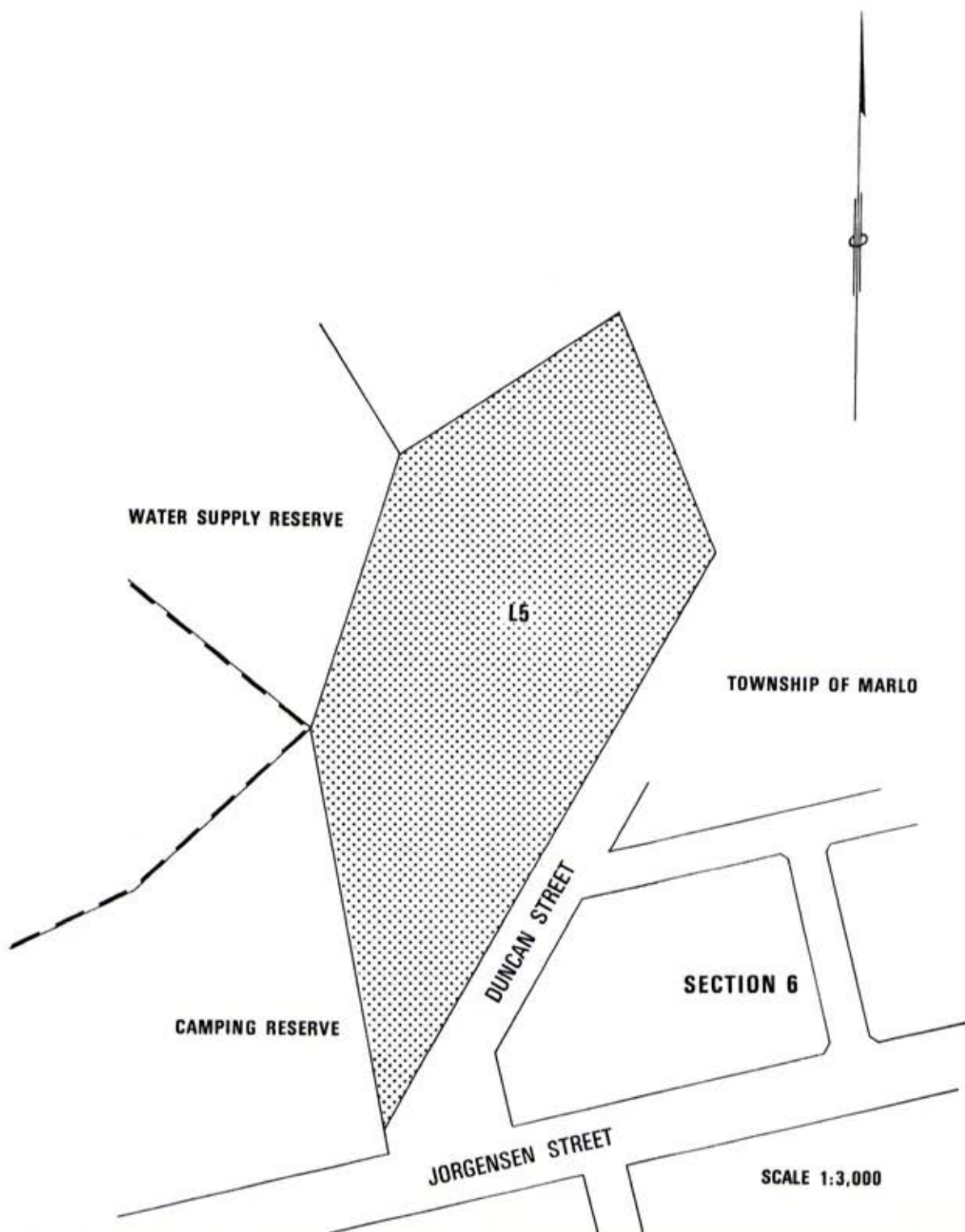
Creek

MALLACOOTA
INLET

TOWNSHIP
OF
MALLACOOTA

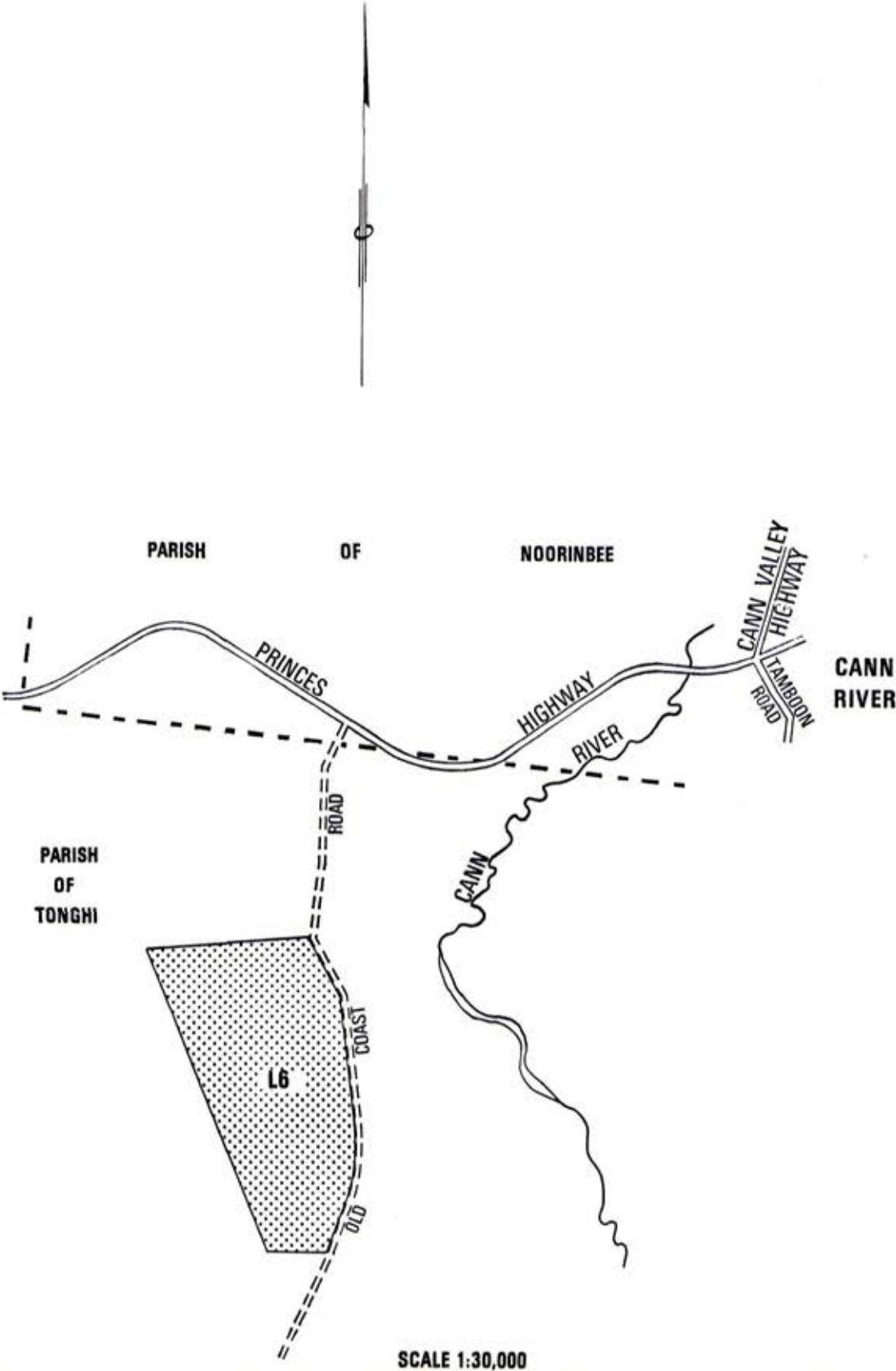
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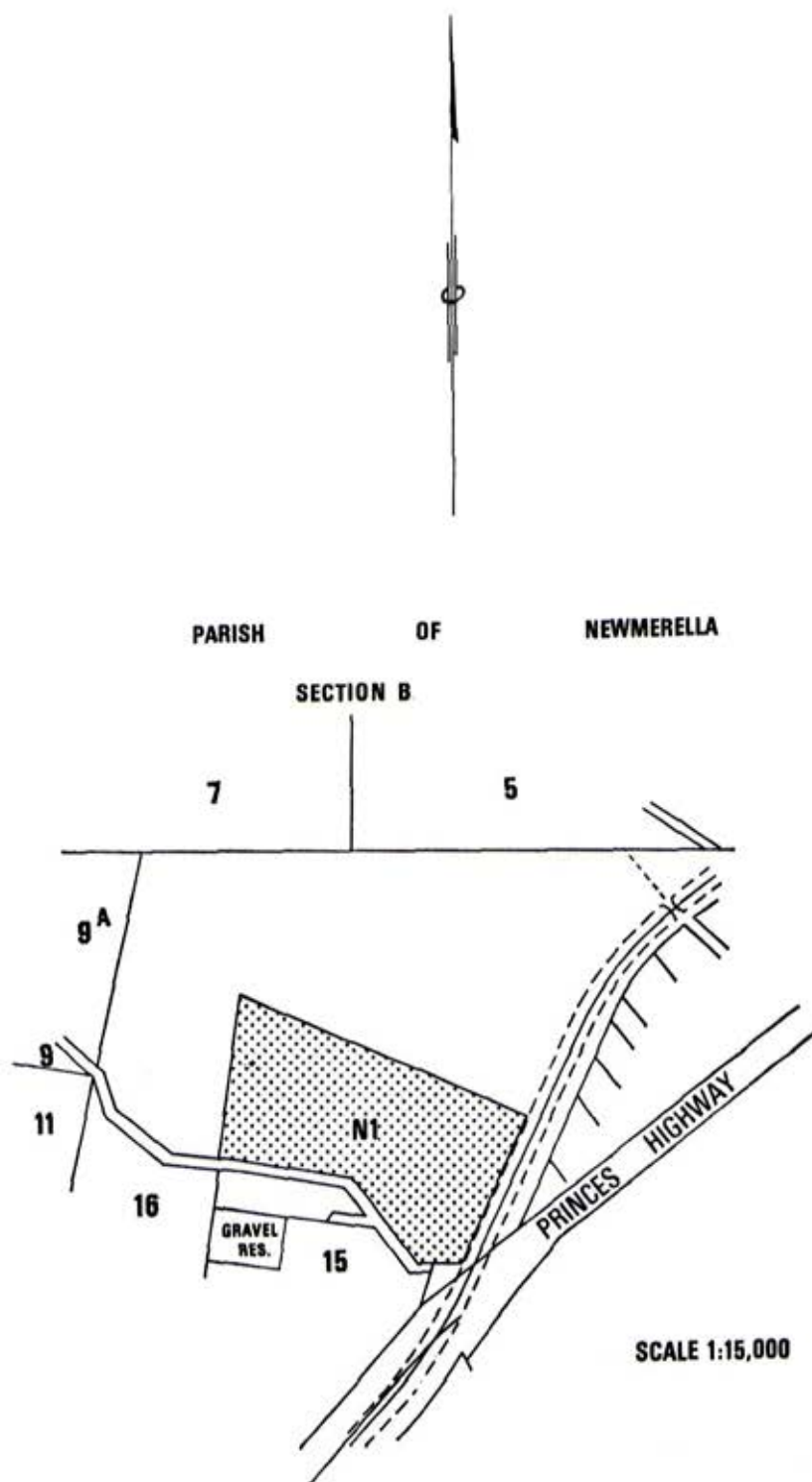
RECREATION RESERVE L6
TONGHI

MAP No.4



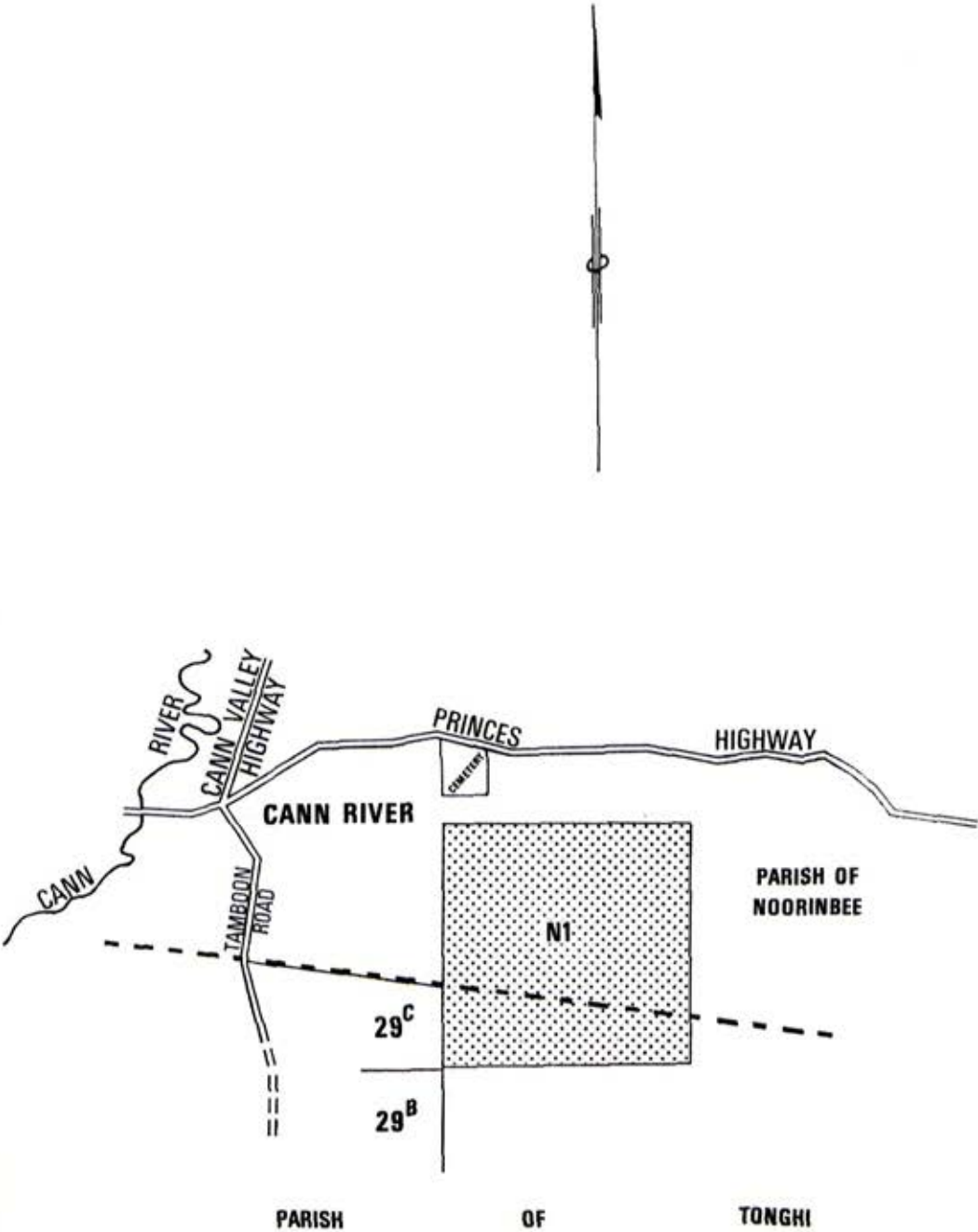
AGRICULTURE N1
NEWMERELLA

MAP No.5



AGRICULTURE N1
TONGHI

MAP No.6



SCALE 1:30,000