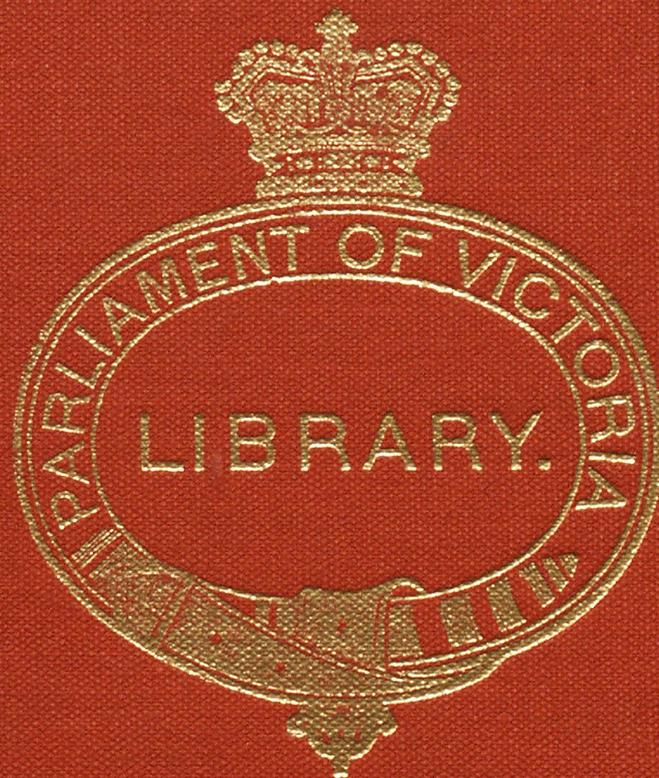


VICTORIA

MINUTES  
OF THE  
PROCEEDINGS  
OF THE  
LEGISLATIVE  
COUNCIL

—  
VOL. 8  
SESSION  
1982-85





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**MINUTES OF THE PROCEEDINGS**  
**OF THE**  
**LEGISLATIVE COUNCIL OF VICTORIA**

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**SESSION 1982-85**

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**VOLUME 8**

DOCUMENTS ORDERED TO BE PRINTED



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PARLIAMENT OF VICTORIA

SALINITY COMMITTEE

THIRD REPORT TO PARLIAMENT

SALT OF THE EARTH:  
FINAL REPORT ON  
THE CAUSES, EFFECTS AND CONTROL  
OF LAND AND RIVER SALINITY IN VICTORIA

OCTOBER, 1984

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Ordered to be printed

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D-No. 49/1982-84



Salt. damaged land in north-western Victoria

# THE SALINITY COMMITTEE

## COMMITTEE MEMBERS

Mr. W.F. Fogarty, M.L.A. (Chairman)  
Mr. E.J. Hann, M.L.A. (Deputy Chairman)  
Mr. G.F. Stirling, M.L.A.  
Mr. H.R. Dickinson, M.L.A.  
The Hon. L.A. McArthur, M.L.C.  
The Hon. J.W.S. Radford, M.L.C.

## COMMITTEE STAFF

### Research

Mr. G.M. Hunter, Director of Research

Mr. Q. Farmar-Bowers  
(courtesy of Rural Water Commission,  
Sept. 1983 - Feb. 1984)

Mr. J. Day  
(courtesy of Department of Agriculture,  
Sept. 1983 - Feb. 1984)

Mr. P.J. Elliot  
(courtesy of Department of Agriculture,  
March 1984 - Sept. 1984)

### Administration

Mr. G.J. Senn, Secretary

Mrs. P.J. Hansson, Stenographer



## FOREWORD

In response to the growing problems of land and river salinity in Victoria, the Parliamentary Joint Select Committee on Salinity (the Salinity Committee) was established by the Victorian Parliament in July 1982. Its purpose has been to inquire into salinity with particular reference to the opportunities for co-operative efforts in salinity control involving other State Governments and the Australian Government, methods of meeting the costs of salinity control, and administrative and other arrangements for salinity control.

Our hope is that the results of our work will provide a comprehensive basis upon which to develop an effective program for the control of salinity in the State.

The success of the Inquiry has depended upon the contributions of many people. Chief amongst them have been the several hundred people representing all sectors of the rural community, Government departments, research institutions, private industry and public interest groups who prepared submissions of such high quality for our consideration.

We also express our sincere gratitude to:

- farmers and people representing various interested communities who gave their time to inform the Committee of their concerns,
- Local Government Councils and their staff who provided every assistance to the Committee, with inspections, advice and comprehensive submissions,
- the many specialists in various fields of salinity control who assisted us, particularly the non-government specialists on our Research Advisory Group, the Government staff on the Departmental Salinity Liaison Committee, and members of the team who undertook for us a strategic study of salinity control in Northern Victoria,
- the teams of private consultants who gave excellent service in synthesising and reporting on relevant technical data,
- and members of the organising group for our Community Conference in

Bendigo earlier this year who contributed greatly to its success.

I would like to pay a special tribute to the staff of our Committee upon whom so much of our work has depended. The administrative burden of this Inquiry and our concurrent one into the Allocation of Water in Northern Victoria has been expertly borne by the Secretaries of the Committee who were, first, Mr. Ray Purdey and, later Mr. Gary Senn, and by Mrs. Pamela Hansson, our stenographer.

In February 1983, the Committee appointed Mr. Graham Hunter as its Director of Research. Assisted by research staff seconded from Government agencies, he has guided the planning of our Inquiry, the use of expertise and the collection of information with skill and imagination.

Finally, I particularly wish to thank my fellow members of the Committee for their co-operation and support throughout the Inquiry and for the skills that they brought to it.

Controlling the problems of salinity is a major challenge for our State. We trust the result of our work will assist the task, and commend consideration of this report to the Parliament and the people of Victoria.

W.F. Fogarty, M.P.

Chairman

Parliament House,  
Melbourne.

25 October 1984.

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## THE COMMITTEE AND ITS WORK

### TERMS OF REFERENCE

When the Salinity Committee was established as a Joint Select Committee of the Parliament of Victoria on 1 July, 1982, it was given the following Terms of Reference:

1. *To inquire into and report upon the salinity of land and water with particular reference to -*
  - (a) *the social, environmental and economic effects of -*
    - (i) *dry land salinity;*
    - (ii) *salinity associated with irrigation; and*
    - (iii) *increased salinity in rivers and streams as a result of factors within Victorian control.*
  - (b) *opportunities for co-operative efforts in salinity control involving other State Governments and the Australian Government;*
  - (c) *methods of meeting the costs of salinity control; and*
  - (d) *administrative and other arrangements for salinity control, including integration with other aspects of land and water management.*
2. *That, in respect of the terms of reference, the Committee shall give priority to an inquiry into the Barr Creek catchment and the Mineral Reserve Basin and Lake Tyrrell schemes and is required to report there on to the Houses within six months.*
3. *That, subject to paragraph 2, the Committee shall give priority to such investigations referred to it by resolution of the Legislative Council and the Legislative Assembly.*

To enable the specific Terms of Reference to be addressed adequately, the Committee determined that the scope of its Inquiry should include a compilation of information on the causes of salinity problems, as well as

effects of salinity, an evaluation of the possible methods and schemes by which salinity might be controlled, and an assessment of factors associated with the organisation and management of salinity control, the associated provisions for planning and regulation, the requirements for education and research, the funding arrangements, and the opportunities for inter-governmental co-operation.

#### MEMBERS AND OFFICERS OF THE COMMITTEE.

In July 1982, Messrs. W. F. Fogarty, F. J. Hann, G. F. Stirling and the Hon. A. Wood from the Legislative Assembly and the Honourables L. A. McArthur and J.W.S. Radford from the Legislative Council were appointed to the Committee (see Extracts from Minutes, Appendix 1). At its first meeting on 3 August 1982, Mr. Fogarty was elected Chairman and Mr. Hann Deputy Chairman. In March 1983, Mr. Wood resigned from the Legislative Assembly and his position on the Committee was filled by the Hon. J. H. Ramsay, M.L.A., in May 1983. In March 1984, Mr. Ramsay was discharged from attendance on the Committee to enable him to join another Parliamentary Committee and Mr. H. R. Dickinson, M.L.A., appointed in his stead.

The Secretary of the Committee was Mr. R. W. Purdey until August 1983, and then Mr. G. J. Senn. In February 1983 the Committee appointed Mr. G. M. Hunter, B.E., M. Eng. Sc., M.Sc., as its Director of Research. Research officers seconded through the courtesy of Government departments to assist in the Salinity Inquiry have been Mr. Q. Farmer-Bowers, B. Sc., Dip. Agr. Econ., M.A., Mr. J. Day, B. Agr. Sc., Dip. Fd. and Mr. P. Elliot, B. Agr. Sc. The Committee's Stenographer was Mrs. P. Hansson.

The Committee has held 104 meetings of which 16 were public hearings for the Salinity Inquiry.

#### METHOD OF INQUIRY

As outlined in the Committee's Second Report to Parliament, its inquiries comprised a program of community consultation, research and analysis, and reporting. The Salinity Inquiry has involved the following activities:

## **Visits and Inspections**

The Committee inspected salt-affected property and salinity control projects in Victoria, South Australia, New South Wales and Western Australia. A list of the areas visited is given in Appendix 2. The Committee was guided during these visits by staff of Government departments, landowners, councillors and staff of municipalities, and staff of research institutes.

## **Hearings and Submissions**

The Committee advertised its hearings in the metropolitan and regional newspapers and invited evidence from interested people and organisations. Public hearings were held in the regional centres of Kerang, Mildura, Swan Hill, Bendigo, Hamilton, Shepparton and in Melbourne. Evidence was received from the witnesses listed in Appendix 3. Further written submissions were received from the people listed in Appendix 4.

## **Consultants' Studies**

To assist it in the collection and interpretation of technical information the Committee commissioned in June 1983 two studies by a group of consultants from ACIL Australia Pty. Ltd., Gutteridge, Haskins and Davey Pty. Ltd., Australian Groundwater Consultants Pty. Ltd., and the Melbourne University School of Agriculture and Forestry.

The objectives of one study, which was led by ACIL Australia Pty. Ltd., were:

- (a) To collate existing information on the physical causes, the extent and severity, and the social, environmental and economic effects of land and water salinity that is associated with activities under Victorian control.
- (b) To assess the reliability of available information as a basis for policy decisions.

- (c) To identify significant gaps in the understanding of the causes, extent and effects of salinity associated with activities under Victorian control.

The objectives of the other study, led by Gutteridge, Haskins and Davey Pty. Ltd., were:

- (a) To assess the success of physical and bio-physical techniques that have already been implemented to control land and water salinity that is associated with activities under Victorian control.
- (b) To collate existing data on relevant characteristics of possible control techniques.
- (c) To assess the short-term and long-term advantages and disadvantages of implementing the possible control techniques in salt affected regions of Victoria.
- (d) To identify the current impediments to the development of techniques and further application of the most advantageous techniques.
- (e) To identify significant data gaps of relevance to the above objectives.

Both studies drew substantially on information made available from the following State Government organisations:

Soil Conservation Authority,  
Rural Water Commission,  
Forests Commission,  
Department of Agriculture,  
Department of Minerals and Energy,  
Environment Protection Authority,  
Fisheries and Wildlife Division.

Each of these organisations was represented on a Departmental Salinity Liaison Committee which facilitated the transfer of data to the consultants.

The reports of the studies were completed in September 1983 and subsequently released by the Salinity Committee for public comment. In the following chapters, the reports are referred to as ACIL Australia (1983) and Gutteridge, Haskins and Davey (1983).

### **Community Surveys**

The Committee has surveyed the perception of salinity problems by sending questionnaires to the councils of the 162 non-metropolitan municipalities in Victoria. In addition, the Australian Bureau of Statistics agreed to a request by the Committee to include in the Agricultural Census, that was sent to all Victorian farmers in March this year, a question on the area of salt affected farmland.

### **Community Conference**

The Committee sponsored a Community Conference on Salinity Control at the Bendigo College of Advanced Education on 18 - 19 February 1984. The Conference was attended by 370 people from the farming community, government organisations, consulting and research groups, and other interests.

### **Technical Seminar**

A technical seminar was held on 13 April 1984, and attended by specialists in irrigation under the chairmanship of Professor T. McMahon, Professor of Agricultural Engineering, University of Melbourne. Its purpose was to provide the Committee with an assessment of the available data on the causes of rises in watertables and salinity in irrigation regions of Victoria. The report by Professor McMahon on the seminar was released for public comment.

## **Discussion Papers**

Three discussion papers were commissioned by the Committee and released for public comment during 1984. They were:

- . "The Organisation and Management of Salinity Control in Victoria" by M. Mackay and Associates,
- . "Financing Salinity Control in Victoria" by Michael Read and Associates,
- . "Inter-Governmental Co-operation in Salinity Control" by Professor S. D. Clark.

## **Strategic Study**

A strategic study of Salinity Control in Northern Victoria was undertaken for the Committee by a Study Team composed of consultants and of specialists from five Government agencies in Victoria. The study, which took place during July-September 1984, was led by the consulting firm Dwyer Leslie Pty. Ltd., in association with Maunsell and Partners Pty. Ltd. The aim of the study was to assess the requirements, and options for the future protection of agricultural productivity and the generation and disposal of saline wastes throughout Northern Victoria. The study was guided by a Steering Committee and Consultative Group, the members of which are listed in Appendix 6. The report of the Study Team is referred to in the following chapters as Dwyer Leslie (1984).

## **Specialist Reviews**

The submissions received by the Committee on the requirements for research and for education and extension in salinity control have been reviewed by independent specialists in those fields. Dr. A.J. Peck, Senior Principal Research Scientist, C.S.I.R.O., undertook the review of research and Dr. H.S. Hawkins and Mr. J.W. Cary, School of Agriculture and Forestry, University of Melbourne, reviewed the submissions on education and extension.

## Other Data Sources

The Committee has had access to the range of technical publications on salinity that are available in Australia. It has obtained information on the management of salinity in other countries through discussions with specialists from overseas and by a review undertaken for it through the International Referral System of the United Nations Environment Program.

### BARR CREEK CATCHMENT, MINERAL RESERVE BASINS AND LAKE TYRRELL SCHEMES

In December 1982, the Committee presented a Progress Report to Parliament on this Term of Reference. The report indicated that the Committee was awaiting the outcome of a study by the Water Commission before reporting finally on the Barr Creek Catchment, that further time was necessary to assess adequately the Mineral Reserve Basins Scheme, and that the Lake Tyrrell Scheme was no longer a viable option in the short term. In November 1983, the Minister for Water Resources agreed to the Committee's request that work on the Mineral Reserve Basins Scheme should be postponed pending a broader examination of the scheme in the context of the overall management of salinity in Northern Victoria. However in March 1984, the Committee was informed that the Government had decided to resume work on the scheme.

The Barr Creek Catchment Study was completed in March 1984 and the results have been taken into account by the Committee in the preparation of this report.

### COMMITTEE PUBLICATIONS

The Committee's publications are listed in Appendix 5. During the course of its Inquiry, the Committee presented the report to Parliament on the "Barr Creek Catchment, Mineral Reserve Basins and Lake Tyrrell Schemes" and, in October 1983, on "The Activities of the Salinity Committee". The discussion papers and the reports of the consultants' studies, the technical seminar and the strategic study are available to the public through the Victorian Government Bookshop. The Committee has also widely circulated

two issues of a Newsletter describing its activities. Copies of the transcripts of evidence have been distributed to selected parties and are available for reading at the State Library and principal regional libraries.

### CONCURRENT INQUIRY

In December 1982, the Committee received further Terms of Reference from the Parliament requiring it to conduct an Inquiry into the "Allocation of Water in Northern Victoria". The report on this second Inquiry is to be presented to Parliament in October 1984.

### ADVISORY GROUPS

The Committee has been fortunate in the range of specialists from which it has been able to seek advice. Early in 1983 the Committee formed a Research Advisory Group of non-government specialists to assist it in both Inquiries, and a Departmental Salinity Liaison Committee to facilitate interaction with government agencies. The membership of these bodies is given in Appendix 6.

## KEY FINDINGS

### THE PROBLEM

#### The Cause

- *Salt-affected soils, saltpans, salt marshes and saline streams and groundwater have been a feature of the environment in western and northern Victoria since long before European settlement.*
- *Following European settlement, human activities have redistributed or exposed the naturally occurring salt and resulted in a major environmental problem with substantial economic and social repercussions.*
- *The reason for most salinity problems of soil and water has been a rise in the levels of watertables, bringing salt to the surface.*
- *This extra groundwater has resulted from such activities as the widespread replacement of native vegetation with shallow-rooted crops and grasses, the introduction of irrigation, and the construction of unsealed water channels and reservoirs.*
- *The formation of salt scalds by the erosion of the topsoil to expose a saline subsoil has also occurred in north-western Victoria.*

#### The Extent

- *Salinity problems occur throughout northern and western Victoria and are increasing in severity. About 2,400 square kilometres of farming land is observably damaged by salt due to rising watertables or salt scalds.*
- *The most concentrated problems occur in Australia's largest irrigation region, the Goulburn-Murray Irrigation District, where 1,400 square kilometres suffer damage from salt, and 4,000 square kilometres are potentially salt prone. Within the Shepparton Region, a major expansion of salt affected land could occur within the next decade unless further control measures are taken.*

. The more widespread and insidious problems are associated with the seepage salting of non-irrigated land in scattered localities throughout northern and western Victoria. Altogether 400 square kilometres are observably affected and an equivalent area suffers some decline in productivity. The worst affected regions are in:

- the Mallee
- the northern slopes of the Dividing Range
- The Western District, and
- the Barwon Region.

These areas could double within the next thirty years and, in the case of the Mallee, could increase tenfold.

. Associated with land salinity is erosion and an increase in the salinity of rivers, including the River Murray. Rises in the salt content of borewater and damage to wetlands from salinity have also been reported.

### The Costs

. The total cost from damage due to salinity in Victoria is about \$40 million per year. Already \$10 million per year is spent on salinity control. Worst hit are the irrigation areas. The Kerang Region suffers a loss in agricultural productivity of 25% and the Shepparton Region 7%, resulting in a combined loss of \$30 million per year. Productivity losses of \$3 million per year occur in dryland areas. Additional economic costs of Victoria's salinity are associated with damage by saline water to industrial and domestic appliances, roadways and irrigated crops. If no further major control measures are implemented, the costs of salinity to Victoria could treble within the next thirty years, with the major increases occurring in the Shepparton Region, the Mallee and Wimmera, and the Riverine Plains.

. About 2,500 farmers in Victoria have indicated that their property suffers salt damage. It is a problem that often appears to the individual to be unsolvable, inequitable and inexplicable, resulting in economic losses and personal anxiety.

## THE SOLUTION

### Salinity Control Methods

- *The solution is to achieve a new balance in the inputs and outputs of the soil-water system at a productive and sustainable level.*
- *This requires the application of a range of control techniques, including changes in land management practices in the major intake areas of the groundwater system, groundwater pumping, treatment of salt affected sites and satisfactory disposal of saline wastes.*
- *In Northern Victoria, a strategy for salinity control to protect both agricultural productivity and environmental quality will require public expenditure of \$70-\$90 million over the next ten years to support farm-based measures and capital works. Components of the salinity control strategy should include:*
  - *a concentrated effort to control dryland salinity in the upland regions,*
  - *enhancement of surface drainage in the Kerang and Shepparton Regions,*
  - *groundwater pumping in the Shepparton Region.*
- *The production of salt wastes in Northern Victoria cannot be avoided. Within the next ten years, the principal method of their disposal is likely to be by discharge to the River Murray. This will require an allocation of water to dilute the wastes to an acceptable level.*
- *Beyond that period, river dilution is unlikely to be satisfactory. As a matter of urgency, a long-term sustainable means of disposal must be developed.*

## Implementation

### *Administrative Arrangements:*

- . *The widespread changes in land management that will be necessary to combat salinity will require the integration of action by the many Government agencies involved in aspects of salinity control and the co-ordinated action of landholders.*
- . *A Salinity Control Board should be established to recommend and review State policies and objectives for salinity control, develop a State-wide strategy for salinity control, and ensure adequate co-ordination of the activities of Government agencies. This part-time Board should be composed of community representatives and staff of Government agencies.*
- . *Salinity control should be co-ordinated on a day-to-day basis by a single Government agency, formed by combining the Land Protection Service of the Department of Conservation, Forests and Lands with the Department of Agriculture.*
- . *To enable the available expertise to be fully utilised, the Land Protection Service should extend its work into constituted irrigation districts and the Groundwater Section of the Department of Minerals and Energy should be upgraded and transferred to the Department of Water Resources.*
- . *Action by landholders should be co-ordinated by introducing measures which will facilitate planning for salinity control at regional, sub-regional and farm levels.*
- . *An effective advisory and educational program for landholders and the community should be developed and this should include the establishment of inter-agency field teams for salinity control.*
- . *Research, investigation and monitoring should be intensified, a State Salinity Research Strategy prepared, and the Irrigation Research Institute at Tatura established as a major centre for research into salinity of both irrigated and non-irrigated regions.*

### *Meeting the Costs:*

- . *Further incentives for landholders to adopt salinity control measures should be provided by introducing a Salinity Loans Scheme and Salinity Grants Scheme for irrigated and non-irrigated regions.*
- . *The State Government should have the capacity to buy back land in sensitive areas.*

### *Inter-Governmental Co-operation:*

- . *The Victorian program will be assisted by, and should contribute to, further inter-governmental co-operation between States in the Murray-Darling Basin and other States with common problems. The Victorian Government should:*
  - *seek an expansion of the role of the River Murray Commission to enable it to contribute more comprehensively to the management of the Murray-Darling Basin,*
  - *encourage the Federal Government to establish a Murray Basin Forum composed of representatives from Government and non-Government organisations,*
  - *promote the development of a joint State strategy for the disposal of saline wastes, and*
  - *promote opportunities for joint research and educational programs between Victoria and other States.*



## CONCLUSIONS

### TYPES OF SALINITY PROBLEMS (Chapter Two)

1. Many parts of Victoria are suffering from increasing concentrations of salts in soil and water bodies. This is affecting the economic usefulness and environmental amenity of these resources and threatens to degrade the resources further unless additional remedial action is taken.
2. The principal social, environmental and economic effects identified by the Committee have been associated with dryland salting, salting and high watertables in irrigation areas, rivers and stream salinity, effects on lakes and wetlands and groundwater salinity.

### CAUSES (Chapter Two)

3. Before European settlement, salt affected soils, salt pans, salinas, salt marshes, saline streams and saline groundwater were a feature of the environment in the western half of Victoria. The present salinity problems have resulted largely from human activities which, in the brief period since European settlement, have modified the natural distribution of the salt.

### Rise in Watertables

4. The major reason for many salinity problems of soil and water has been the rise in the levels of watertables in parts of northern and western Victoria. This has been caused by practices which have increased the rate of recharge of water to the groundwater thereby upsetting the hydrological equilibrium which previously existed. Such practices on the recharge zones of aquifers have included the replacement of forests with agricultural activities which intercept less rainfall, the construction of unsealed water storages and channels which allow water to leak to the groundwater bodies, and the introduction of irrigation.
5. The increased water flowing through the surface layers dissolves salt which has been stored there during past geological ages and transports it to the groundwater system. As the watertables rise, the saline water may discharge at a greater rate to streams or be brought sufficiently close to

the surface of the land to evaporate, leaving concentrated salts in the soil.

6. In dryland areas this had led to the development of saline seeps and contributed to the salinity of streams, water storages and lakes. While much of the dryland salinity is a consequence of past practices, particularly forest clearing, significant contributions to rises in watertables may also result from such ongoing activities as:
  - removal of trees
  - extensive fallowing and use of shallow-rooted plant species in agriculture,
  - leakage from the Wimmera-Mallee stock and domestic channel system.
7. In irrigated areas, accessions to the watertables from rainfall are supplemented by accessions of irrigation water and seepage from the earthen channels which distribute the water. Irrigation water, by reducing the capacity of the upper layers of soil to absorb further water, can predispose the land to accessions from rainwater. Ponding of water on paddocks and in storage basins can further add to the accessions.
8. The watertables in some of the irrigation regions of northern Victoria are also influenced by pressure levels in the underlying deeper regional aquifers, the deep leads. These levels have risen as a result of accessions not only from the irrigation areas but from the dryland areas to the south. As a result, the Kerang irrigation region is now a zone of regional groundwater discharge and water from the shallow aquifers can no longer escape to the deeper groundwater system. In the Shepparton Region, the deep leads can still accept recharge from above, but at a decreasing rate.
9. There is a lack of field measurements of the relative contributions to the watertable in the irrigation regions from each of these sources: rainfall, irrigation practices, regional groundwater flow and seepage from channels and ponds.
10. The available data with which to assess the efficiency with which farmers apply the irrigation water is inadequate. The limited measurements suggest that the excess of water which reaches the watertable beyond

that required to leach salts from the root zone, is low in the Shepparton Region but could be significant in the Kerang area.

#### Exposure of Saline Subsoil

11. Salt scalds are caused when erosion of topsoil exposes a saline subsoil. This has occurred in parts of the Mallee. In this case, the erosion of the topsoil has followed clearing of vegetation, over-grazing and inappropriate cropping practices.

#### Decreased Diluting Capacity of Water Bodies

12. Activities which reduce the capacity of water bodies to dilute their salt content have resulted in an increase in the concentration of salt in the water. Particular examples that have been drawn to the attention of the Committee are:
  - the diversion of water for irrigation and other uses from rivers, including the River Murray.
  - the installation of flood control works which have inhibited the natural flushing of lakes in the Kerang Region.

#### Discharge of Saline Wastes

13. Wastewater which contains significant quantities of salt is released from drainage systems in irrigation areas of Northern Victoria to the River Murray or diverted to evaporative disposal sites. Thus the solution to one aspect of the salinity problem may contribute to another. The disposal of saline wastes from urban and industrial areas also adds salt to the environment.

#### Cumulative Impacts

14. The Committee has considered the cumulative impact of the foregoing causes on the River Murray system and the Barwon Region.

## River Murray

15. The increase in the salinity of the River Murray with distance downstream is a result of both natural and induced inflows of salt. Of the total average inflow from Victoria of 700,000 tonnes of salt each year, over half is induced, largely as a result of irrigation development in Kerang, Shepparton and Sunraysia regions. Of the induced inflow, about one third comes from the Barr Creek in the Kerang Region. The contribution from salinity associated with rising watertables in the non-irrigated areas of Northern Victoria is uncertain but could be about 10% of the induced inflows. Whilst all of the Victorian sub-catchments of the Murray contribute substantial quantities of salt, the concentrations of the inflows generally increase to the west and the contribution from the discharge of groundwater becomes more significant. About one third of the total inflow of salt from Victoria is diverted back to Victoria in supplies of irrigation water.

The relative influence of all these contributions on the water quality in South Australia depends upon the point and concentration of discharge and the intervening diversion of water from the River. This is currently being assessed by the River Murray Commission.

## Barwon River

16. Stream salinity is widespread throughout the Barwon Region in southern Victoria. In the Barwon River, increasing concentrations of salt are the result, not only of natural input, but of induced salinity from earlier clearing of forests, saline drainage associated with flood relief schemes on lakes in the Colac district, and discharge from sewage treatment and groundwater pumping.

## PRESENT EXTENT (Chapter Three)

### Soil Salinity

17. Dryland salinity is observable over a combined area of 100,000 hectares in Victoria. Saline scalds affect 60,000 hectares of land in the Mallee. Saline seeps observably affect about 40,000 hectares. A further area of about 40,000 hectares suffers some decline in productivity from seepage

salting or is now at some risk from rising watertables. Of the observable seepage salting about 30% occurs on cropping land in the north west of the State, 55% on grazing land in the Highlands, Western Plain and the Dundas Plateau and adjacent areas of the south west, and 15% on cropping and grazing land in catchments on the northern slopes of the Dividing Range in central and eastern Victoria.

18. In the irrigation regions of Kerang and Shepparton about 140,000 hectares suffer damage from salt. Almost 400,000 hectares of land are salt prone, having saline watertables within 1.8 metres of the surface. This represents about 70% of the Kerang Region and 20% of the Shepparton Region. A drainage system now protects the Sunraysia Region from high watertables. The Committee is not aware of salinity problems arising from high watertables in the smaller irrigation schemes in Victoria.

#### Water Salinity

19. Groundwater salinities vary greatly throughout the State, but generally increase from the east to the west. While localised increases may be attributed to practices such as waste disposal or irrigation, the overall extent of groundwater salinity that is due to man's activities is not known.

Streams in the east of the State are generally fresh, but those in the west contain higher concentrations of salt.

20. In the River Murray, salinity levels rise progressively downstream, with major increases at the confluence with the Loddon River and in the Red Cliffs - Merbein Reach.

#### TRENDS (Chapter 4)

21. Information provided to the Committee from many people indicates that the salinity problem in Victoria is increasing. This is associated with a long term trend in the rise in watertables in the western half of Victoria and some north eastern areas as documented by Government authorities and observed by many landholders who presented evidence to the Committee. On the other hand, the area of salt scalds, which are not linked to rises in watertables, now appears to be static.

22. Seepage salting in dryland areas appears to be increasing in area at about 2% each year. The rate of increase is greatest in wet years. The Soil Conservation Authority expects the salt affected areas to double on average by the year 2000 if present trends continue. In the Mallee, a tenfold increase in the affected area could occur.
23. In the northern irrigation areas, the past rate of rise in watertables has been about 0.35 metres per year. In the Kerang Region the input of water to the watertables now appears to be balanced by evaporation and drainage losses, but the danger remains that in very wet years this balance could be upset and peripheral dryland areas could be affected.

In the Shepparton Region, the pressure levels in the Deep Lead aquifers are rising thereby reducing the capacity of water in the shallower aquifers to drain away. Without further control measures, a major expansion of salt-affected land could occur within the next decade.

24. The Committee has not received comprehensive data on salinity trends in water bodies. Specific cases which have been brought to its attention include:
- increasing concentrations of salt in lakes near Kerang,
  - rises in the salt concentration of Rocklands Reservoir which contributes to the Wimmera-Mallee Stock and Domestic Supply System.

For the River Murray, trends in the salinity of water are difficult to assess due to the variable nature of the flow and salt loads. However the concentration of salt in the water entering South Australia may have increased in recent years at the rate of about 4 mg/L year.

#### ECONOMIC EFFECTS (Chapter 5)

25. The economic effects of salinity result from damages caused by induced salinity and the costs of remedial measures. The effects of salinity on agricultural production, and on man-made equipment and structures have economic consequences. The total cost of salinity to Victoria is about \$50 million per year, of which \$10 million is the current level of expenditure

on salinity control. If no further control measures are introduced, the damage due to salinity is likely to treble within the next thirty years.

### Damage Costs

26. The annual loss in value of agricultural production in Victoria has been estimated as \$0.1 million due to salt scalds, \$2.9 - \$3.7 million due to seepage salting in dryland areas, and \$32 million due to high watertables and salinity in irrigation areas. This corresponds to a loss in productivity of 7% in the Shepparton Region and about 25% in the Kerang Region. Without further control measures, the cost in dryland areas could double and in the Shepparton Region could increase five fold within thirty years.
27. The cost of damage to household equipment in Victoria caused by supplies from the Wimmera-Mallee distribution systems is \$1.2 million per year and for supplies to other towns and cities in Northern and Western Victoria is about \$2 million per year.
28. Costs due to the weakening of road foundations by high watertables and the effect of salinity on road materials may be significant. The additional maintenance cost in the Bendigo, Ballarat and Horsham divisions of the Road Construction Authority is \$1.1 million.
29. Estimates of costs to South Australia due to high levels of salt in the River Murray are \$2.5 million per year in the Riverland Irrigation Region and \$6 million per year for domestic and industrial water users. The proportion of this cost which might be associated with inputs of salt from Victoria has not yet been determined.

### Abatement Costs

30. Salinity control measures which have already been implemented in Victoria include collective interception and disposal schemes for saline groundwater and drainage water in Northern Victoria and on-farm measures by landholders in both irrigated and non-irrigated regions. Expenditure on both public and private schemes, financed through government departments and on associated research and investigation in Victoria, has been about \$9 million per year in recent years. Unidentified

expenses, particularly by individual farmers, may add significantly to this sum.

## HEALTH AND ENVIRONMENTAL EFFECTS (Chapter Six)

31. Generally the effects on health of salinity in drinking water in Victoria appear to be minor. The allowable concentrations of the various chemicals that contribute to salinity in water are well established and used by authorities to ensure that the water supply is of a satisfactory quality. However, the Committee notes the increasing body of data which suggests that elevated levels of sodium in the diet may contribute to hypertension and mortality from vascular disease. Sodium is not currently listed in water quality objectives. The National Health and Medical Research Council has recently recommended a maximum level for drinking water. This level is currently exceeded in the water supplies to a number of towns in western Victoria.
32. Rising watertables and salinity levels have affected terrestrial and aquatic vegetation and hence wildlife habitat, particularly in northern Victoria. Specific examples which have been brought to the attention of the Committee include:
- widespread death of trees in the marshes of the Avoca River as a result of saline watertables,
  - damage to trees in about twenty percent of the area of black box forests in the Cohuna Forest District,
  - damage to river red gum frontages along the Loddon River, Bullock Creek and Barr Creek.

The contribution of high watertables to tree decline in non-irrigated areas of rural Victoria may also be significant.

33. Wildlife habitat has been affected also by salinity control measures. Artificial drainage in irrigation areas has been constructed through small natural wetlands which, once drained, lose their value to wildlife. More significant is the effect of disposing of saline effluent to natural

depressions which then act as evaporation basins and can no longer support freshwater dependent species.

### SOCIAL EFFECTS (Chapter Six)

34. The Committee has been exposed to a depth of feeling and concern by many landholders whose property or region is affected by salinity. It has become apparent that the effects on individuals and their community are substantially greater than might be suggested from the overall impact of salinity on the national economy.
35. The affected landowner suffers, not only because of the immediate loss in farm production but also because he is afflicted with a problem that is inequitably distributed throughout the region, may have no guaranteed solution that is within his power to implement, and is growing. In extreme cases the reduced profit and high cost of any remedial works that might be undertaken leads to despondency, stress and possibly social breakdown as farmers are forced to live with declining returns.
36. These effects have been more evident in parts of irrigation regions than in dryland regions of Victoria. The social effects of salinity are often difficult to isolate from other problems affecting rural communities. There is evidence that a combination of factors, including salinity, have resulted in reduced opportunities for employment in some areas leading to the departure of youth, reduction in service facilities and diminished regional development.

### SALINITY CONTROL TECHNIQUES (Chapter Seven)

37. Salinity control is currently directed at ameliorating the consequences of salinity rather than at the causes. As a result, the problems continue to grow.
38. The principal causes of salinity problems, that are associated with rising watertables, can only be addressed by treating the preferential recharge zone of the groundwater system or removing water from the aquifers.

39. Treatment of a recharge zone requires selecting the most appropriate combination of techniques for the particular location. It also requires co-ordinating implementation throughout the recharge zone.
40. Of particular importance is the control over any changes in the use of land in the recharge zone which may result in greater accessions to the sensitive groundwater systems. Such practices may include:
- clearing of deep rooted vegetation
  - excessive fallowing
  - excessive application of irrigation water
  - construction of unsealed water storages or channels
  - inadequate drainage of floodwaters.
41. The response of areas, that are already salt affected, to the treatment of the recharge zones will depend on the extent of treatment and on the nature and extent of the affected groundwater system. For localised systems, the benefits of treatment may be observed within several years. For regional systems, the response time may be several decades, even centuries. Thus, even with intensive implementation of techniques for controlling recharge of groundwater, many of the salinity problems will continue to grow before they begin to abate.
42. The effectiveness and economic viability of many of the techniques is still uncertain. Preference must therefore be given to those techniques for which there are associated benefits besides salinity control. In dryland agriculture these may include:
- tree planting, particularly in areas of low agricultural productivity,
  - replacement of some shallow-rooted plants with deeper-rooted species.

In irrigated regions they may include:

- various methods of water conservation,
- re-layout of land to facilitate surface drainage and water application.

43. Other techniques which should be available for future control of salinity, as appropriate, include:
- sealing of water storages and conduits,
  - groundwater pumping and tile drainage,
  - surface drainage by constructed or natural drainage lines,
  - re-allocation of irrigation water away from sensitive recharge zones.
44. The principal impediments to the greater application of the techniques of recharge control on farms include:
- lack of awareness and concern about salting,
  - lack of understanding of the mechanisms of soil salting and related control measures,
  - financial constraints,
  - apparent inequities associated with the separation in distance and time between the cause and effect.
45. The control of salinity would therefore be facilitated by providing for the following in sensitive recharge areas:
- extended research and education programs,
  - capacity to constrain the clearing of vegetation,
  - encouragement of preferred farming practices,
  - encouragement of tree planting,
  - encouragement of relay layout of irrigated land,
  - transfer of entitlements for irrigation water.
46. The potential of salinity problems to increase in the future justifies a major expansion in the program of recharge control and a transition from the current research phase to a broad-scale implementation phase. However, because of the substantial uncertainties associated with many of the techniques, intensively monitored trial schemes must often precede the development of full scale programs.
47. Even in the event of widespread recharge control, there will remain the need to dispose of saline wastes. These will result from the interception of saline groundwater or surface drainage. The three possible forms of

disposal are by evaporation on land, discharge to rivers during periods of regulated flow, or transport to the sea.

## REGIONAL STRATEGIES (Chapter Eight)

### Northern Victoria

48. The potential contribution to salinity problems in the region from dryland salting in the Uplands of Northern Victoria is significant. A concerted effort to control dryland salinity in the areas is therefore warranted at an estimated additional expenditure over the next ten years of at least \$5 million.
49. The protection of agricultural productivity in irrigation areas will involve an accelerated program of on-farm measures. This will include the encouragement of land layout, micro-irrigation of high value horticultural crops and, in the Shepparton region, private groundwater pumping and reuse. An expenditure by the public sector of an additional \$40 million over the next ten years is justified.
50. The protection of agricultural productivity in irrigation regions also justifies further enhancement of surface drainage by, at least, improving natural drainage lines in both the Kerang and Shepparton regions at a cost of \$10 million over the next ten years. The extension of the main drainage system in the Shepparton region may also be warranted.
51. Despite the foregoing measures, the control of watertable levels will require groundwater pumping. The concept of pumping in both Kerang and Shepparton regions is endorsed but the Shepparton Scheme warrants priority. The Strategic Study undertaken for the Committee has vindicated the Shepparton Hybrid Scheme in principle and emphasised its urgency.
52. The Strategic Study has demonstrated the lack of a long-term scheme for proper disposal of saline wastes. These will result from the protection of agriculture and the environment. The Committee accepts the principle of a non-degradation policy for the River Murray. It also agrees that river dilution may provide the best short-term strategy for release of Victoria's saline wastes. However, this can only be acceptable if a satisfactory

alternative disposal scheme is available for the longer term. The immediate development of such a scheme is therefore imperative.

53. In the context of the Strategic Study, the Mineral Reserve Basins scheme could provide a useful offset for discharges to the River Murray. (Because this Scheme is currently the subject of litigation, the Committee has refrained from making further comment).
54. Factors which should be taken into account in establishing a long-term disposal strategy include the potential for salt harvesting. The potential requirements for disposal by neighbouring States and the need for an approach which is adaptable to changing conditions must also be considered. The Committee notes that both disposal by a pipeline or by evaporation will require the capacity to pond the wastes. A procedure by which the community can select appropriate sites is therefore required.
55. The current condition of the Kerang Lakes region is unsatisfactory. Inadequate consideration in the past of the region as an inter-related system has led to its degradation. There is a need to re-evaluate the management of the Lakes region in the light of a broad strategy for salinity control and water management in Northern Victoria.
56. The Barr Creek Catchment Study has provided a useful basis on which to develop management plans for the area that are consistent with a broad regional strategy. The development of the management plans should preferably be led by the affected community itself.
57. The Mangilac - Colignan scheme, which will create saline wastes, requires re-evaluation in the context of the regional strategy.
58. Inadequate information on the Karadoc Swamp scheme is available to permit assessment.
59. Resulting from the foregoing observations is a clear need for a more sophisticated and comprehensive approach to the management of salinity in Northern Victoria. In the past, neither the knowledge of the interactions nor the perceived magnitude of the problems has encouraged a basin-wide approach. Such reasons cannot be used as excuses in the future.

## Other Regions

60. The two principal aspects of North West Victoria that require further clarification are the desirability of converting parts of the Wimmera-Mallee Stock and Domestic Channel System to a pipeline in locations with permeable soils, and the development of agronomic measures applicable on a broad scale.
61. In South West Victoria, the causes and effects of salinity are localised and their management therefore depends upon co-operation between small groups of landholders.
62. In the Barwon Region, the watertables are influenced by regional aquifers and hydrological control over a large area may be required, coupled with co-ordinated management of the land and water resources.

## GUIDING PRINCIPLES FOR IMPLEMENTATION (Chapter Nine)

63. Any arrangement for salinity control should:
  - constitute an appropriate level of response,
  - be durable,
  - be adaptable,
  - have the capacity to integrate salinity control with other aspects of land and water management,
  - have the capacity to view all aspects of salinity as components of a single inter-dependent problem,
  - use expertise and resources effectively,
  - have the ability to involve all segments of the community,
  - have the capacity for inter-governmental co-operation,
  - be able to co-ordinate landholders effectively,
  - provide appropriate incentives,
  - involve the private and public sector in a balanced way.

## ORGANISATION AND MANAGEMENT (Chapter Ten)

64. A major drawback to salinity control has been the fragmentation of responsibility for it between government agencies. The responsibility is currently divided between the Ministers of Agriculture, Water Resources,

Minerals and Energy, Conservation Forests and Lands, and Planning and Environment, and over twelve organisational units under these Ministers.

65. As a result, the capacity for an integrated salinity control program in the State is limited. There is currently a lack of State-wide objectives and policies, of a State plan for salinity control, of an integrated salinity control budget, of overall evaluation and review of performance, and of a co-ordinated research strategy.
66. The functional agencies operate effectively within their areas of responsibility, but the lack of involvement by the Department of Agriculture in dryland salinity, by the Land Protection Service in irrigation regions, and by the Groundwater Branch of the Department of Minerals and Energy in a functional capacity as part of a routine salinity control program, constrains the use of the expertise unnecessarily.
67. The current arrangements for inter-departmental co-operation provide effective exchange of information but lack a mechanism for the formal co-ordination of action.
68. The only routine schemes for the co-ordination of action by landholders in salinity control are the Group Conservation Projects of the Land Protection Service. There is a need for similar schemes in irrigation regions.
69. Community consultation in salinity control has been adequate to date but there will be an increasing need for community-based initiatives. Local government and local community groups have the potential to play an important role in the management of salinity.
70. An organisational framework which would allow these points to be addressed requires responsibility to be assigned for the preparation at the State level of objectives, policies and plans for salinity control, the capacity to ensure that the resulting strategy is implemented by the appropriate agencies, and the preparation of regional and sub-regional plans within which the action of agencies, landholders and other parts of the community can be co-ordinated.

## PLANNING AND REGULATION (Chapter Eleven)

71. Strategic planning for salinity control must take place at the State, regional and local level, and incorporate objectives, implementation schedules and associated research and education strategies.
72. Regional planning for salinity control should occur at the level of broad catchments or irrigation regions, and should be closely integrated with more comprehensive planning processes.
73. Sub-regional planning at the level of small sub-catchments is a necessary requirement for the effective co-ordination of salinity control measures on each farm.
74. Farm planning has the potential to ensure that salinity control measures on a farm are integrated with other aspects of farm management and to assist in implementation of the sub-regional strategies.
75. Regulations should only be applied where voluntary co-operation is unlikely or will not be effective. The most effective and enduring changes in land management by private landholders will result from voluntary action in response to the provision of information and to encouragement by other landholders.

However, further regulatory methods may be necessary to control certain practices, such as the clearing of vegetation, to facilitate the transfer of water entitlement, and to encourage changes in some practices at the required rate.

## EDUCATION, EXTENSION AND COMMUNITY AWARENESS (Chapter Twelve)

76. A community-wide scepticism about the capacity to manage salinity is largely based on an inadequate understanding of the salinity problem and its possible solutions. This must be addressed by providing not only adequate advisory services to farmers but also an effective community education campaign based on well-developed programs for salinity control.

77. Because salinity control depends upon voluntary action by many landholders, the availability of adequate information and advice to them is essential.
78. Currently, advisory services are provided by the Department of Agriculture, Rural Water Commission, Department of Minerals and Energy, Land Protection Service and Forest Extension Service of the Department of Conservation Forests and Lands, and the Ministry for Planning and Environment. The Land Protection Service has particular responsibility for extension services in the dryland agricultural areas and the Department of Agriculture and Rural Water Commission has particular responsibility in the irrigation areas. The education institutions, local government, community groups, media organisations, and commercial organisations also play an important role in the provision of information to the community.
79. Already much has been achieved with the growing awareness by landholders but in some areas there is still a lack of recognition of the problem and lack of awareness of solutions.
80. Group action by landholders must be encouraged. At present the Group Conservation Projects of the Land Protection Service in dryland agricultural areas appear to be satisfactory but there is no corresponding arrangement in irrigated areas.
81. There is a need for greater co-ordination by agencies so that advice is linked to integrated plans of action and is not conflicting. There are possible advantages in amalgamating the extension services of the Department of Agriculture and the Rural Water Commission in irrigation areas.
82. There is also a need for the expertise of each agency in the development of salinity control schemes at the farm level to be available to farmers in an integrated form.
83. Most of the foreseeable requirements for extension work by agencies can be met by existing resources unless some augmentation is justified.

84. The future success of advisory services will be dependent on a major research effort which must be closely linked to the extension work of the agencies.
85. Environmental education in schools and other educational institutions could further assist the understanding by the community of the salinity problem. The contribution by government agencies to the school programs could be further assisted by greater co-ordination between the agencies.
86. There is a lack of understanding and awareness of salinity as a major problem by the general community, particularly in metropolitan areas. This will inhibit action by government and landholders and warrants an intensive community education program at the state and regional level.

#### RESEARCH AND INVESTIGATION (Chapter Thirteen)

87. Lack of relevant information is a major impediment to the control of salinity. An effective research and investigation program is therefore one of the highest priorities for the immediate future.
88. Further research into many aspects of the management of salinity is warranted. The most important deficiencies in understanding are:
  - possible changes in the severity and extent of salinity problems,
  - environmental and social impacts of salinity,
  - location of preferential recharge areas for the groundwater bodies associated with salinity problems,
  - the effectiveness and economic viability of alternative cropping and soil management systems and of reforestation to counteract salinity,
  - suitable means of disposing of saline wastes.
89. Five State Government agencies now undertake research and investigation into aspects of salinity directly involving about twenty five professional

staff. There is little research into salinity by organisations outside the State agencies.

90. The effectiveness of the State's research effort is impeded by a lack of strong co-ordination between the agencies in setting priorities and objectives for salinity research, rationalising research facilities, and seeking funds.
91. The scope of the research reflects the professional base of the agencies, and does not include adequate social, economic, and environmental investigations.
92. Rapid access to research results by other organisations, extension officers, landholders and the community in general is essential.
93. There is a need to facilitate innovations in salinity control not only by Government agencies but also amongst landholders and the commercial sector. Field trials should be encouraged and adequately monitored.
94. The monitoring of changes in the extent and severity of salinity problems is currently inadequate to enable a reliable evaluation of the success of the State's salinity control measures.
95. An increase in research funding above the present level is warranted over the next 5-10 years to allow the research program to be intensified.

#### FUNDING (Chapter Fourteen)

96. Because many of the current salinity problems are the result of past actions taken in ignorance of their consequences and with the support of the community, an equitable arrangement for salinity control will involve funding by governments.
97. To date, farm-based works which may contribute to the control of salinity have been financed largely from farm income and normal sources of credit. Frequently, the motivation for undertaking such works has not been the control of salinity but rather the immediate benefits for farm production.

98. Existing financial incentives for farm-based measures include taxation concessions, concessional loans under the Water Management Loans scheme, the farm improvement provisions of the Rural Adjustment Scheme, the Land Form Loans scheme of the Commonwealth Development Bank, and grants for erosion control works and tree growing. Some augmentation of these is justified.
99. A broader interpretation of the Income Tax Assessment Act is warranted to ensure that investments in specified salinity control techniques are eligible for inclusion as tax deductible items.
100. Taxes on specific items are not, at this stage, an appropriate means of discouraging farmers from undertaking activities which may contribute to salinity problems. Nor can a rise in the price of irrigation water be justified solely for the purpose of salinity control.
101. In some circumstances, purchase by the Government of private land that is in a sensitive recharge area will be warranted.
102. Public expenditure on salinity control measures, including capital works, farm-based incentives, a 'buy back' program, extension and education, research and investigation, and planning and administration can justifiably be increased. However, much can be achieved by more effective use of current resources and the necessary increase is not expected to be excessive.
103. Funding of salinity control measures by direct allocation from the Federal Government will remain an important source of finance for salinity control and should be sought through a more co-ordinated approach from the State.

#### INTER GOVERNMENTAL CO-OPERATION (Chapter Fifteen)

104. Co-operation between the Victorian Government and the Governments of other States and the Commonwealth is important for salinity control because Victoria shares the Murray Basin with other States, the management of similar types of problems in each State can benefit from the sharing of information and expertise, and there is a need to identify and address national priorities.

105. Already there is substantial routine co-operation through the River Murray Waters Agreement, through Ministerial Councils and their supporting committees and through joint research projects.
106. Funding of salinity control projects through the Federal Government or River Murray Commission represents an aspect of co-operation. Direct funding between States in compensation for damage by salinity may be advantageous in the future when knowledge of the mechanisms of salinity are better known.
107. Management of the Murray-Darling Basin could be improved by:
- extending the role of the River Murray Commission,
  - forming a Murray Basin Forum of representatives from Government and non-Government organisations to disseminate information and prepare policy proposals,
  - developing Salinity Control Strategies by all States in the Murray Basin,
  - establishing a comprehensive collection of data on land and water resources of the Basin.
108. Co-operative research and investigation into a joint strategy for the disposal of saline waste is warranted.
109. Further joint research projects between Victorian agencies and those of other States would be advantageous and could involve the exchange of research staff, sharing of research facilities and contracting by one State to an institute in another State.
110. The development of national priorities for salinity research should be linked to a salinity control strategy for the Murray Basin.
111. There are also opportunities for education and training expertise in salinity control to be exchanged between States.



## RECOMMENDATIONS

### SALINITY CONTROL TECHNIQUES

- R1. Salinity control programs should place greater emphasis on addressing the causes of salinity problems by controlling recharge of groundwater systems.
- R2. Relevant government agencies should develop the capacity for routine determination of preferential recharge zones as part of land capability surveys.
- R3. Codes of preferred farming practices appropriate to sensitive recharge zones in dryland and irrigated regions should be developed as guidelines for land users and managers.
- R4. As part of the current Inquiry into the Timber Industry, the opportunity for encouraging commercial plantations in sensitive recharge areas should be investigated.
- R5. The capacity to transfer water entitlements from sensitive recharge zones in irrigation areas should be introduced.

### REGIONAL STRATEGIES

#### Northern Victoria

- R6. The results of the Committee's Strategic Study should be used by the Government as a basis upon which to develop a long-term strategy for salinity control in Northern Victoria.
- R7. Within the next ten years expenditure of an additional \$8 million per year should be provided from the public sector for salinity control in Northern Victoria.
- R8. Priority should be given immediately to the investigation and implementation of the Shepparton Hybrid Scheme, and the Barr Creek Catchment Strategy.

- R9. The development of a long-term strategy for disposal of saline wastes should commence immediately and the results should be part of the overall strategy for waste disposal to be discussed by the River Murray Commission.
- R10. Subject to agreement within the River Murray Commission, the principal of river dilution as an important part of Victoria's strategy for disposal of saline wastes in the short term future should be adopted.
- R11. Community based development of management plans for the Barr Creek Catchment and the Kerang Lakes Region should be encouraged immediately.
- R12. Further consideration should be given by the Water Commission to opportunities for flushing Lake Charm to the River Murray during periods of surplus river flows, thereby avoiding the need to backflush to Cullens Lake.

#### Other Regions

- R13. Sealing or piping of the Wimmera-Mallee Stock and Domestic Supply System in regions of permeable soils should be given urgent consideration by the Rural Water Commission.
- R14. Development of land management techniques to combat salinity in the Mallee Region should be given high priority by the Land Protection Service and the Department of Agriculture.

#### ORGANISATION AND MANAGEMENT

- R15. A Victorian Salinity Control Board should be established for an initial period of five years to recommend and review State policies and objectives for salinity control and to ensure that the policies and objectives are achieved through co-ordination of the activities of functional agencies and through community-based action.
- R16. The Salinity Control Board should consist of part-time members representing government agencies and sections of the community and should be the responsibility of a single Minister.

- R17. A government agency should be designated as the 'principal agency' responsible for assisting in the day-to-day co-ordination of salinity control activities and for providing technical and administrative assistance to the Salinity Control Board.
- R18. The Land Protection Services should be transferred to the Department of Agriculture and the resulting Department of Agriculture and Land Protection designated as the 'principal agency' for salinity control, and its Minister as the responsible Minister.
- R19. If that transfer does not take place, the 'principal agency' should be the Department of Agriculture and the responsible Minister the Minister for Agriculture.
- R20. Section 3 of the Land Utilisation (Amendment) Act 1981 should be changed to permit the operation of the Land Protection Service in constituted irrigation districts, and officers of the Land Protection Service should then be available to provide advice and assistance in establishing group conservation projects in irrigated regions.
- R21. The Groundwater Branch should be provided with additional resources to enable it to fulfil its vital role in salinity control, and it should be transferred from the Department of Minerals and Energy to the Department of Water Resources to facilitate the involvement of the Branch in the management of groundwater problems, including salinity.

#### PLANNING AND REGULATION

- R22. The Salinity Control Board should be responsible for ensuring that appropriate planning for salinity control takes place at the State, regional and local levels.
- R23. A State Salinity Control Strategy should be prepared by the Salinity Control Board and form a component of more broadly based State Strategies.
- R24. The preparation of regional, sub-regional and farm plans for salinity control should be facilitated by assistance from government agencies co-ordinated through the Salinity Control Board.

## EDUCATION, EXTENSION AND COMMUNITY AWARENESS

- R25. There should be further development of the group conservation programs in dryland areas and the introduction of corresponding approaches in irrigation areas, based on the preparation of sub-regional plans.
- R26. The 'principal agency' for salinity control should co-ordinate advisory services in both irrigated and non-irrigated regions.
- R27. The farm advisory services of the Irrigation Services Division of the Rural Water Commission should be amalgamated with those of the Department of Agriculture.
- R28. A multi-disciplinary salinity control field team should be formed for the dryland regions and another for irrigation regions. The field teams will provide an integrated source of advice for farmers on the management of salinity problems and will assist extension officers operating within separate agencies.
- R29. Education authorities should recognise the place and importance of salinity control in environmental education programs at all levels.
- R30. Government agencies should co-ordinate their contributions to schools of education material on salinity problems and their control.
- R31. A well publicised community education program should be established at the state and regional level and co-ordinated through the Salinity Control Board.

## RESEARCH AND INVESTIGATION

- R32. Salinity research by State Government organisations should be co-ordinated through a Salinity Research Co-ordination and Advisory Committee which should report to the Salinity Control Board. This Committee should include representatives from State Government agencies and other relevant research organisations.
- R33. A State Salinity Research Strategy should be prepared by the Salinity Control Board as a component of the State Salinity Control Strategy.

- R34. The Tatura Irrigation Research Institute of the Department of Agriculture should be established as a major centre for research into salinity of both irrigated and non-irrigated regions. It should continue to be managed by the Department of Agriculture, and staffed not only by officers of that Department but also by officers seconded from the Department of Conservation Forests and Land, Rural Water Commission and Department of Minerals and Energy, and augmented by socio-economic expertise. A visiting scientist program should be established and international leaders in salinity research encouraged to work at the laboratory for a suitable period.
- R35. Research into salinity by organisations outside the State Government, should be stimulated by engaging in corporative research projects.
- R36. Monitoring of salinity should be co-ordinated through the Salinity Control Board, and include systematic measurement of the salinity of groundwater, rivers and wetlands and of groundwater levels. The question on the Agriculture Census requesting farmers to provide an estimate of the extent of salinity should be retained.
- R37. A compatible data base for all information on the groundwater system collected by Government Agencies should be established by the Groundwater Branch.

## FUNDING

- R38. An extended Salinity Loans Scheme should be established for farmers in irrigated and non-irrigated regions. It should operate for an initial period of five years, and be implemented by the Rural Finance Commission using criteria formulated in association with the Salinity Control Board. The availability of loans at concessional rates should take into account the likely contribution that the measures will make towards mitigating salinity problems, the participation of the farmer in a group project, the extent of farm planning that has been undertaken, and the ability of the farmer to pay for the measures by other means.
- R39. A Salinity Grants Scheme should be established for an initial period of five years to offset the cost of farm plans in designated areas, to promote group conservation projects, to encourage innovation in salinity control,

and to encourage field trials and demonstration projects. The criteria for the provision of the grants should be established by the Salinity Control Board and funds should be administered by the 'principal agency'.

- R40. Provision should be made by the Government for a 'buy back' scheme to enable further purchase of private land located on sensitive groundwater recharge areas.
- R41. Government funding for salinity control in Victoria should be co-ordinated through the Salinity Control Board. The procedure should include the preparation of an integrated budget by the Board, a co-ordinated approach through the Board and the Department of Management and Budget to the Federal Government for funding as appropriate, and the allocation of funds through the Board to each functional agency to finance its salinity program.

#### INTER GOVERNMENTAL CO-OPERATION

- R42. The Victorian Government should explore with the Governments of neighbouring States and the Commonwealth the means whereby the deficiencies of the River Murray Waters Agreement as a mechanism for co-operative management of the Murray-Darling Basin could be overcome.
- R43. The Victorian Government should seek an expansion of the role of the River Murray Commission such that:
- . land management agencies can contribute more effectively to its deliberations,
  - . Queensland is represented at its meetings,
  - . it has the capacity to require member States to provide information on relevant characteristics of their land and water resources,
  - . member States are required to notify it of any actions which may affect the water quality of the River Murray,

- representatives of the community in the Murray-Darling Basin can participate in the meetings of the Commission.
- R44. The Victorian Government should encourage the Federal Government to establish and support a Murray Basin Forum to be composed of representatives from Government and non-Government organisations.
- R45. The Victorian Government should seek the responses of the New South Wales, South Australian and Federal Governments and the River Murray Commission, to the Committee's Strategic Study on Salinity Control in Northern Victoria as a basis for the further development of a salinity control strategy for Northern Victoria. It should also urge the River Murray Commission and the neighbouring States to develop and co-ordinate similar types of strategies for the management of land and water salinity.
- R46. The River Murray Commission should be requested to establish and maintain a comprehensive collection of data on the characteristics of the land and water resources of the Murray Basin.
- R47. A joint strategy for the disposal of saline wastes in a sustainable manner should be established by the River Murray Commission as a matter of priority.
- R48. The development of a Victorian Strategy for salinity research, should take into account and promote the opportunities for joint research between Victoria and other States.
- R49. Consideration should be given to the opportunities for the use of common educational material on salinity by States and the establishment of common training programs for staff and landholders involved in salinity control.

## TERMINOLOGY

### GOVERNMENT AGENCIES

During the period over which this Inquiry took place, substantial restructuring of State Government departments occurred.

The Department of Conservation, Forests and Lands was formed. Within that Department the functions of the Soil Conservation Authority are now part of the Land Protection Service, and the functions of the Forests Commission of Victoria are the responsibility of the State Forests and Lands Service.

On 1 July, 1984 the State Rivers and Water Supply Commission ceased to exist. Its functions are currently the responsibility of the Rural Water Commission.

In this report, where a submission to the Committee is quoted, the name of the organisation at the time of making the submission is used. In discussing future arrangements for salinity control, the new name of the organisation is adopted.

### RECHARGE AREAS

The report makes frequent reference to 'recharge areas'. These are areas of land through which a disproportionate amount of water enters the underground water bodies. The capacity of a recharge area to take in the water is influenced by various factors including the permeability of the soils, the structure of the surface and sub-surface layers, the type of vegetation and manner in which the land is managed. Recharge areas play an important role in the development of many salinity problems.

### ABBREVIATIONS

ML    megalitre  
mg/L   milligrams per litre  
ha    hectare (100 ha = 1 square kilometre).

## PART I

### THE SALINITY PROBLEM

Part I (Chapters 1 - 6) contains the Committee's assessment of the causes and the effects of salinity problems in Victoria



CHAPTER ONE  
THE NATURE OF SALINITY

1.1. INTRODUCTION

In this chapter the characteristics of salinity are briefly outlined, and the movement and accumulation of salt in the environment explained. This provides a technical background to the subsequent chapters in which the interaction between land and water use and the movement of salt are discussed.

1.2 WHAT IS SALINITY?

Salinity is commonly referred to as the presence of harmful quantities of salts within soils and water bodies. The relative proportion of the components of these salts differs from place to place but they generally contain the following major ionic species:

- Sodium
- Potassium
- Calcium
- Magnesium
- Chloride
- Carbonate
- Bicarbonate
- Nitrate
- Sulphate

1.2.1 **Water Salinity**

A measure of salinity is the concentration of these major ions in water. Throughout this report, the concentration is expressed as milligrams of total dissolved salts per litre of solution (mg/L). Another common measure of salt concentration is the electrical conductivity of the solution at 25°C. This may be measured in micro Siemens per centimetre ( $\mu\text{S}/\text{cm}$ ). The approximate relationship

between electrical conductivity (EC) and total dissolved salts (TDS) is:

$$(\text{Electrical conductivity}) \times 0.6 = (\text{Total Dissolved Salts})$$

The following salinity classifications have been suggested by the National Water Resources Council and are used in this report:

Class of Water	Salinity	
	TDS (mg/L)	EC ( $\mu\text{S}/\text{cm}$ )
Fresh	Less than 300	Less than 500
Marginal	300-600	500-1000
Brackish	600-1800	1000-3000
Saline	Greater than 1800	Greater than 3000

### 1.2.2 Soil Salinity

Soil salinity is usually measured by the concentration of salts in the solution extracted from a soil sample which is saturated with water. In Australia, soil salinity is often expressed as a weight of soluble salts in a unit weight of dry soil or as a percentage. Surface soils are said to be saline when the sodium chloride content exceeds 0.1% for loams and 0.2% for clays.

## 1.3 HAZARDS OF SALT

The acceptability of certain salinity levels depends on the proposed use of water or soils. These levels have been tabulated in Chapters 2 and 6 of ACIL Australia (1983).

### 1.3.1 Human Health

High concentrations of salt affect the acceptability of water and certain levels can cause illness. The possible contribution of long term consumption of lower concentrations is noted later in this Report.

### **1.3.2 Animals**

Livestock may suffer from excessive salt concentrations in their drinking water as well as from the toxic effects of specific salts. Unsuitable drinking water may interfere with reproduction and certain animal products, such as milk, may become contaminated with specific toxic chemicals.

### **1.3.3 Plants**

Plant growth and production can be reduced by salinity in three ways. First, excessive concentration of salt in the soil's water can reduce the uptake of water by the plant. Affected plants are unable to utilise all the water that is available in the soil and, unless frequently watered, wilt and die. A second effect is the toxicity of specific types of salts that are absorbed by plants. For example, fruit trees are susceptible to sodium and chloride ions. Salt can also affect plants by action on the soil itself. Salt accumulation in the soil can lead to dispersion of the soil aggregates upon watering. Such soils become sealed and may limit the infiltration of water. Consequently, low water penetration or slow drainage through the soil may reduce plant growth.

### **1.3.4 Ecosystems**

By directly affecting the functioning of some biota in an ecosystem, such as a river, lake or wetland, an increase in the concentration of salts can result in modifications to the ecosystem as a whole.

### **1.3.5 Domestic and Industrial Equipment**

Salt dissolved in the water supply can contribute to problems of hardness, the corrosion of appliances and scale formation.

### 1.3.6 Road Materials

There is some evidence to suggest that common salt (sodium chloride) in high concentrations can reduce the strength of lime stabilised road materials.

## 1.4 SOURCES OF SALT

The major sources of soluble salts in inland Victoria are weathered rock, wind borne oceanic salts (cyclic salts) and salt that has remained in the landscape after the recession of marine waters during past geological periods.

Broadly speaking, there are two zones in which significant amounts of salt are known to be found in Victorian soils and rocks, namely:

- (a) The unsaturated strata which lie above the watertable, and
- (b) The saturated strata containing salty groundwater.

## 1.5 THE NATURAL MOVEMENT OF SALT IN THE ENVIRONMENT

### 1.5.1 Water and Hydrochemical Cycles

The naturally occurring soluble salts are transported and redistributed through the landscape in water. The movement of salt is therefore intimately associated with the water cycle which is illustrated in Figure 2, and its counterpart, the hydrochemical cycle, shown in Figure 3. When rain falls on the land a small proportion, about 0.8% when averaged over Victoria, percolates through the surface layers and recharges the underground water. The rest either evaporates, is transpired by plants, or flows along the surface into streams. The water which has infiltrated into the surface may leach soluble salts from the unsaturated zone. This water, carrying the salts, then moves into the saturated layer and through the aquifers so that it ultimately discharges to the land surface at a lower position in the landscape, or into streams, lakes and other wetlands.

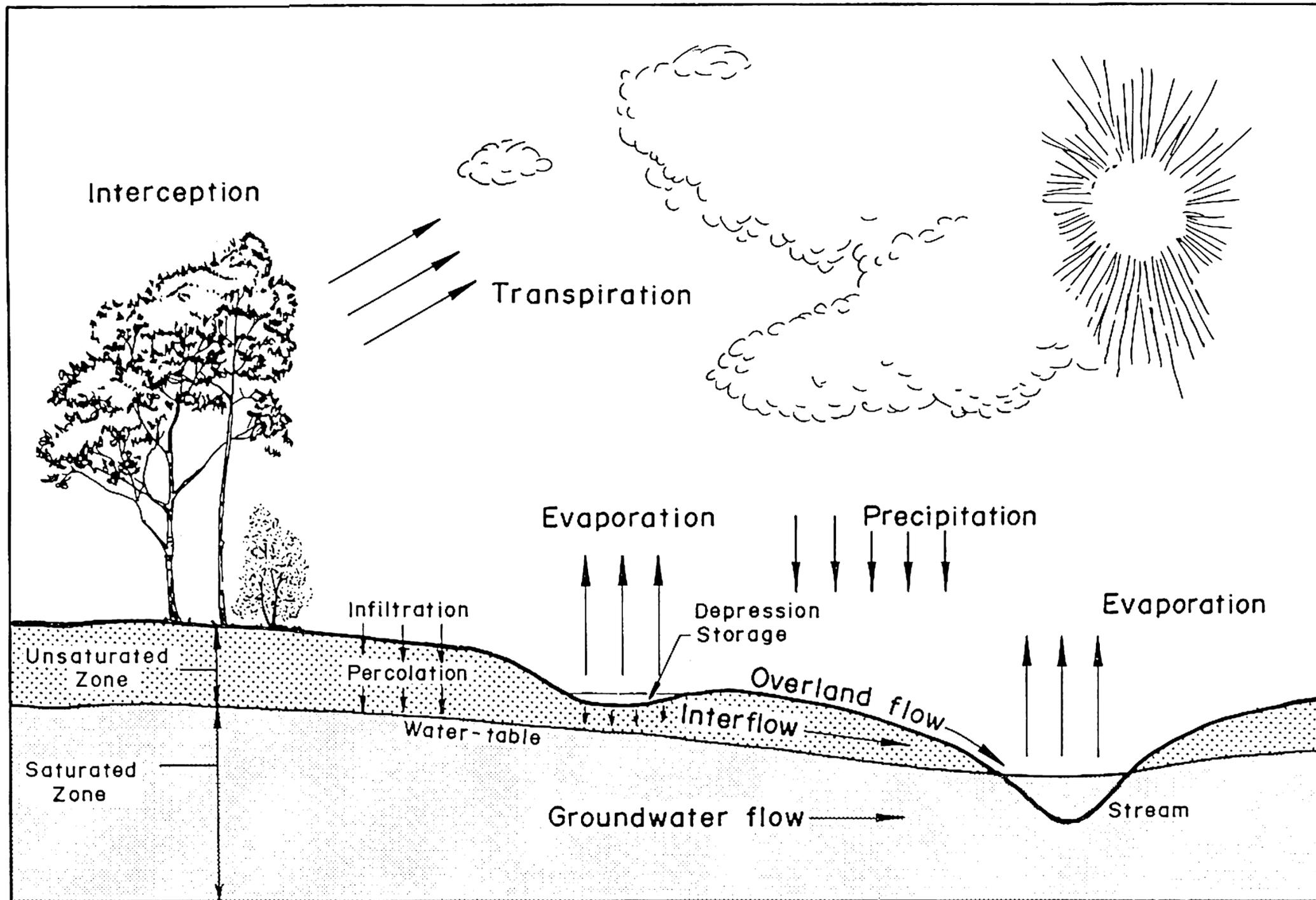
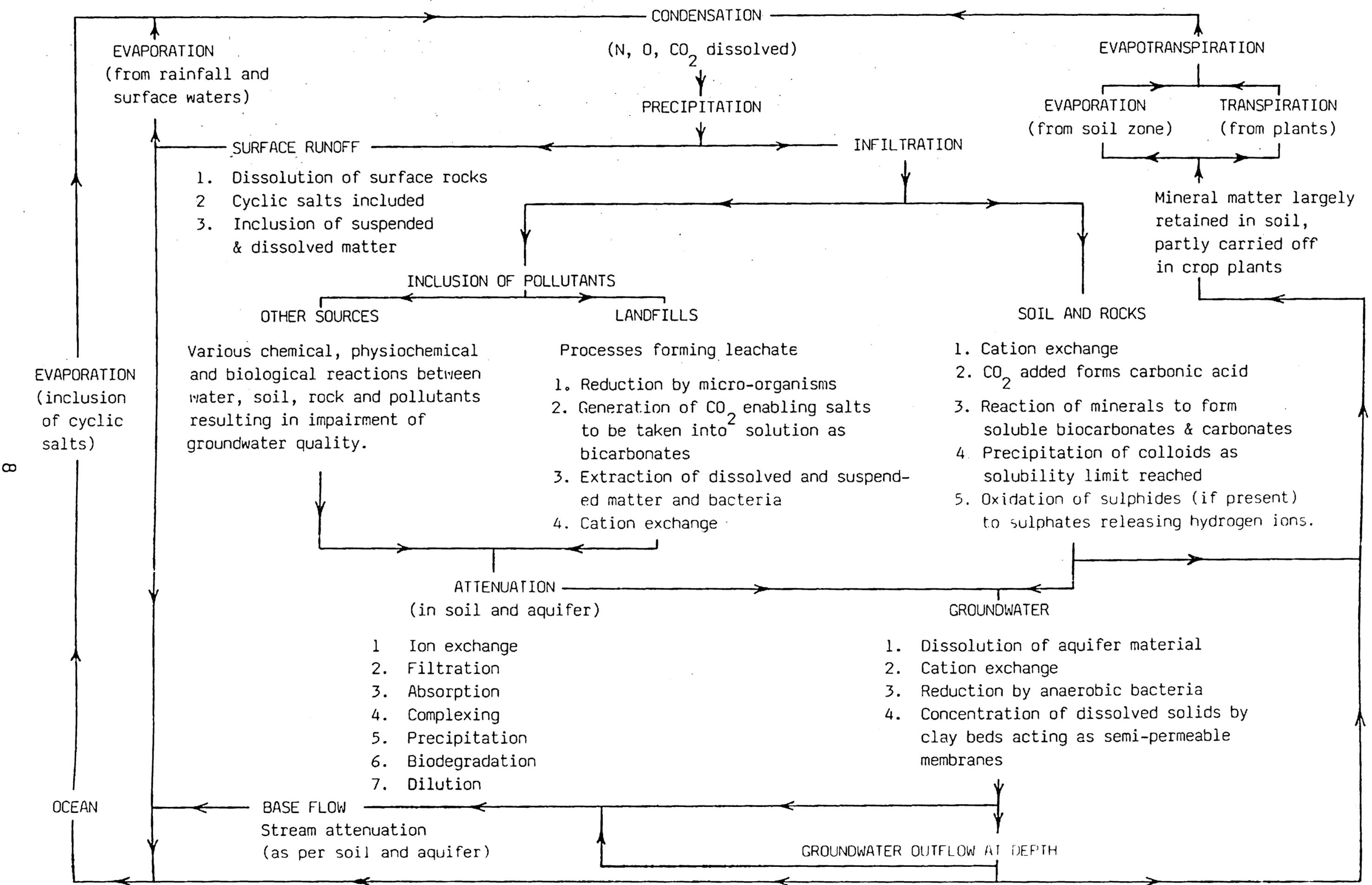


Figure 2. The Land Phase of the Hydrologic Cycle.



### 1.5.2 Groundwater Flow

Both localised and regional movements of groundwater are responsible for the transport of salt. The regional pattern of groundwater flow in Victoria is shown in Figure 4. In its submission to the Committee, the Department of Minerals and Energy described the groundwater flow in northern Victoria. In a manner similar to that used for surface drainage systems, the groundwater system can be subdivided into basins or "catchments". In northern Victoria the groundwater system consists of the Highlands Province and the Murray Basin. The Highlands Province in the Great Dividing Range comprises a series of connected groundwater basins. The Murray Basin is one groundwater basin. It is roughly circular in shape and spans parts of Victoria, New South Wales and South Australia. The groundwater can flow from parts of the Highland Province to the Murray Basin. Major sites of groundwater recharge are near the southern and eastern margins of the basin and discharge occurs towards the basin's centre in north-western Victoria.

The Murray Basin itself is composed of the Mallee region, where most of the strata were deposited under a sea, and the Riverine Plains to the east. In the Mallee region, the principal shallow aquifer is a continuous sand sheet (the Parilla Sand) where the discharge sites of the natural watertable form widespread salt lakes and gypsum flats. In places, this regional watertable is overlain with a clay deposit which can cause localised perched watertables. The aquifer systems of the Riverine Plain are more complicated. A shallow regional aquifer system, the Shepparton Formation occurs in the top 1.5 metres and overlies the principal aquifer, the Calivil Formation. The lower Calivil Formation comprises permeable deep leads, the location of which is shown in Figure 5.

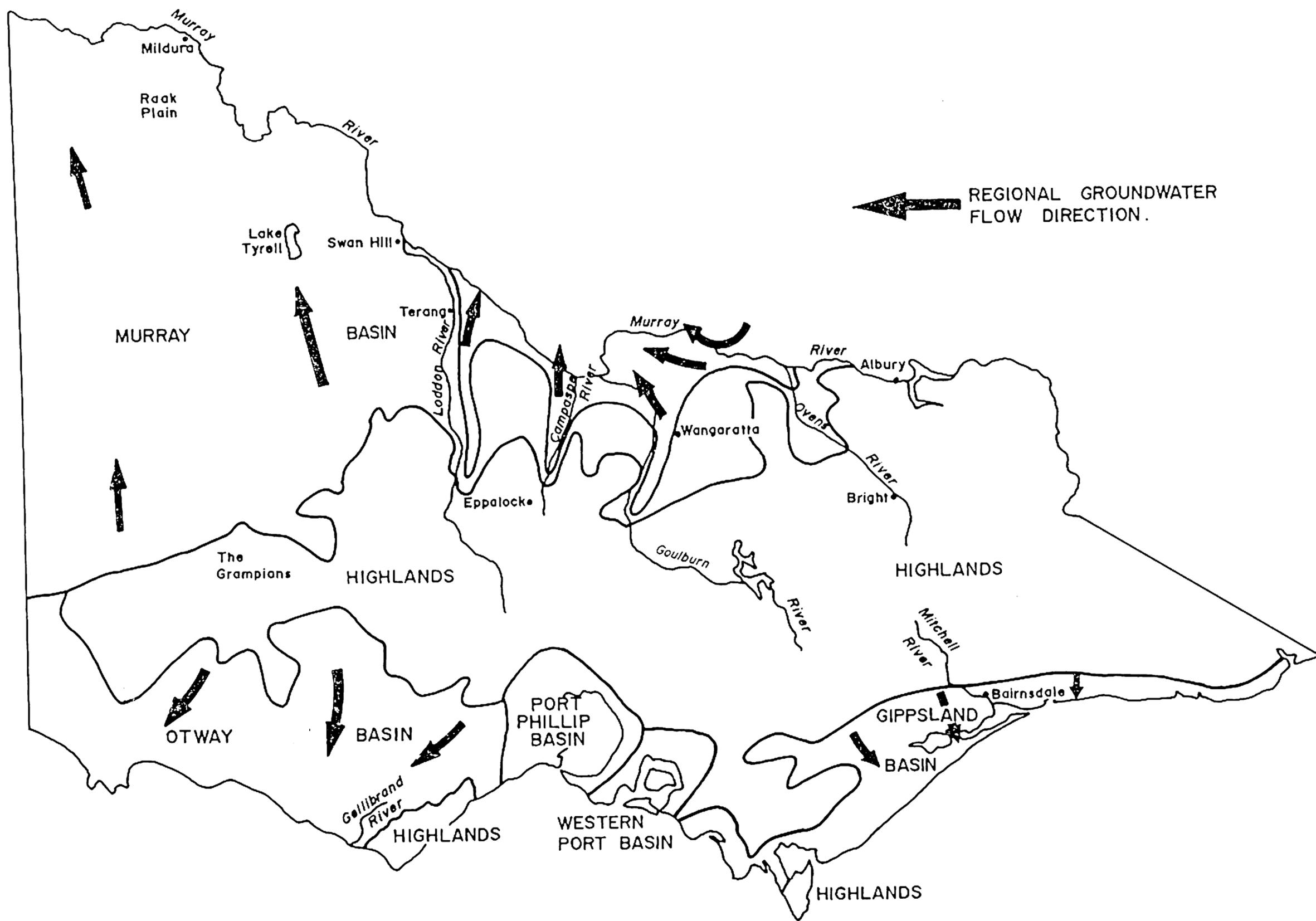
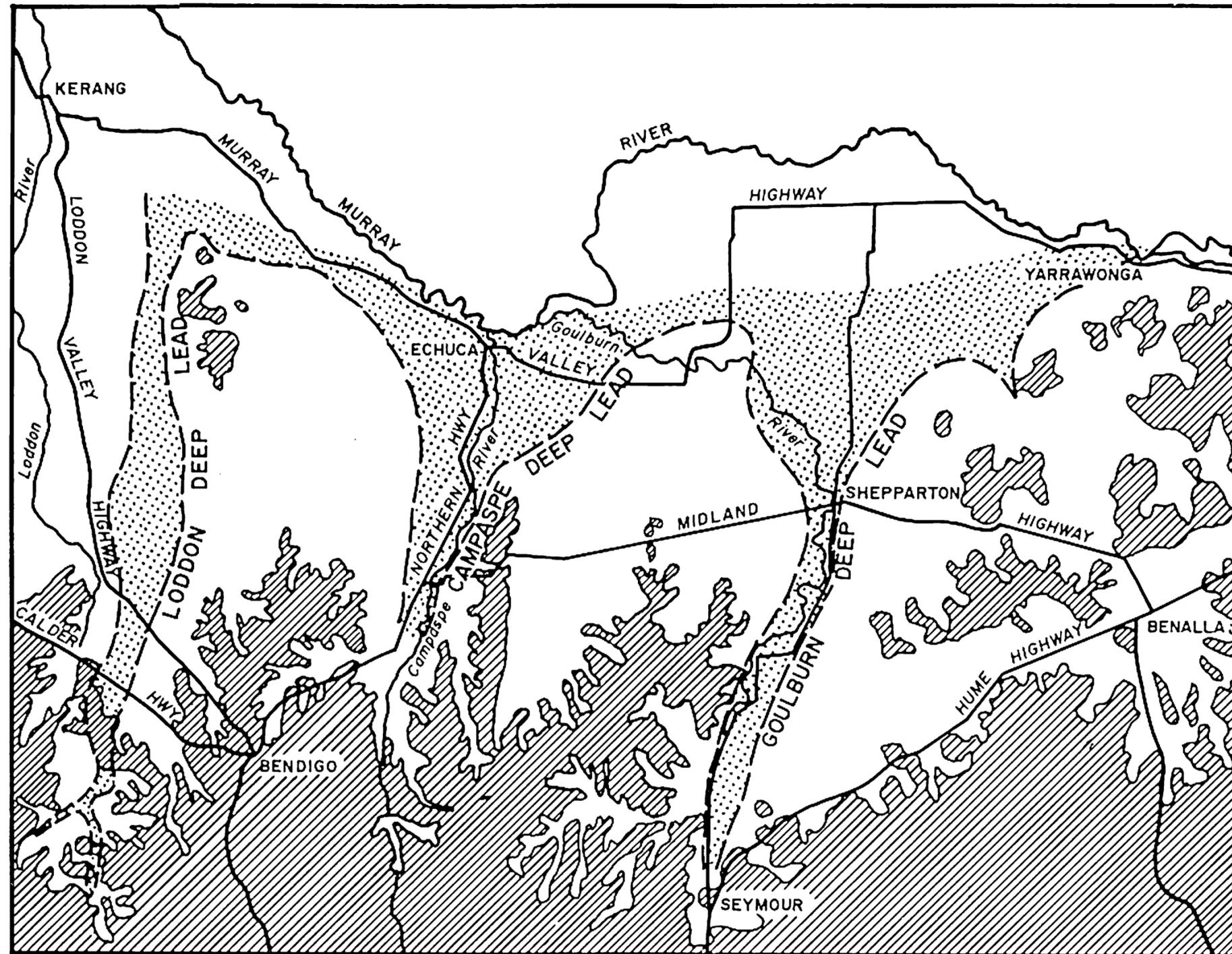


Figure 4. Groundwater Basins and Generalised Regional Groundwater Flow in Victoria.



Source: Macumber, 1978  
 Proc. Roy. Soc. 90 (1): pp.125-138.

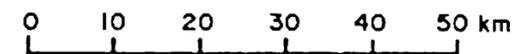


Figure 5. Location of Deep Lead Sediments beneath the Riverine Plains of Northern Victoria

### 1.5.3 Stream Flow

In streams, the groundwater component forms the base flow. The effect of this groundwater discharge on the quality of water in the stream depends upon the proportion of total stream flow that is attributable to groundwater, and the proportion due to direct run-off of rainwater from the surface and the associated salt load of each component. The salt can be further transported in the streams to other locations. The pattern of river basins in Victoria is shown in Figure 6.

## 1.6 THE ACCUMULATION OF SALT

The concentration of salt within the soil or groundwater can increase as a result of several processes:

- (a) leaching of soluble salts by water passing through the above strata; or
- (b) evaporation of water by the sun's energy; or
- (c) extraction of water in the soil by the roots of vegetation.

These mechanisms can contribute to the salinisation of inland water bodies and of soils. In the case of soils, evaporation of the discharging groundwater at the surface can cause accumulation of salt not only on the surface but also to a depth of several metres.

## 1.7 NATURAL SALINITY

The natural distribution of inland salt is broadly reflected in the salinity of groundwater as shown in Figure 7. The highest concentrations of salt located in the north-west of the State are associated with low rainfall and marine sediments that occur in the Mallee. Less saline groundwater in the east reflects the higher rainfall which more rapidly replenishes the groundwater in that region with freshwater. Between these two regions, the groundwater contains salts at varying concentrations depending on the parent material and the weathering processes associated with the geological and climatic history.

MURRAY-DARLING DIVISIONSOUTH-EAST COAST DIVISION

- |    |                     |    |                   |
|----|---------------------|----|-------------------|
| 1  | Upper Murray River  | 21 | East Gippsland    |
| 2  | Kiewa River         | 22 | Snowy River       |
| 3  | Ovens River         | 23 | Tambo River       |
| 4  | Broken River        | 24 | Mitchell River    |
| 5  | Goulburn River      | 25 | Thomson River     |
| 6  | Campaspe River      | 26 | La Trobe River    |
| 7  | Loddon River        | 27 | South Gippsland   |
| 8  | Avoca River         | 28 | Bunyip River      |
| 9  | Murray Riverina     | 29 | Yarra River       |
| 14 | Mallee              | 30 | Maribyrnong River |
| 15 | Wimmera-Avon Rivers | 31 | Werribee River    |
|    |                     | 32 | Moorabool River   |
|    |                     | 33 | Barwon River      |
|    |                     | 34 | Lake Corangamite  |
|    |                     | 35 | Otway Coast       |
|    |                     | 36 | Hopkins River     |
|    |                     | 37 | Portland Coast    |
|    |                     | 38 | Glenelg River     |
|    |                     | 39 | Millicent Coast   |

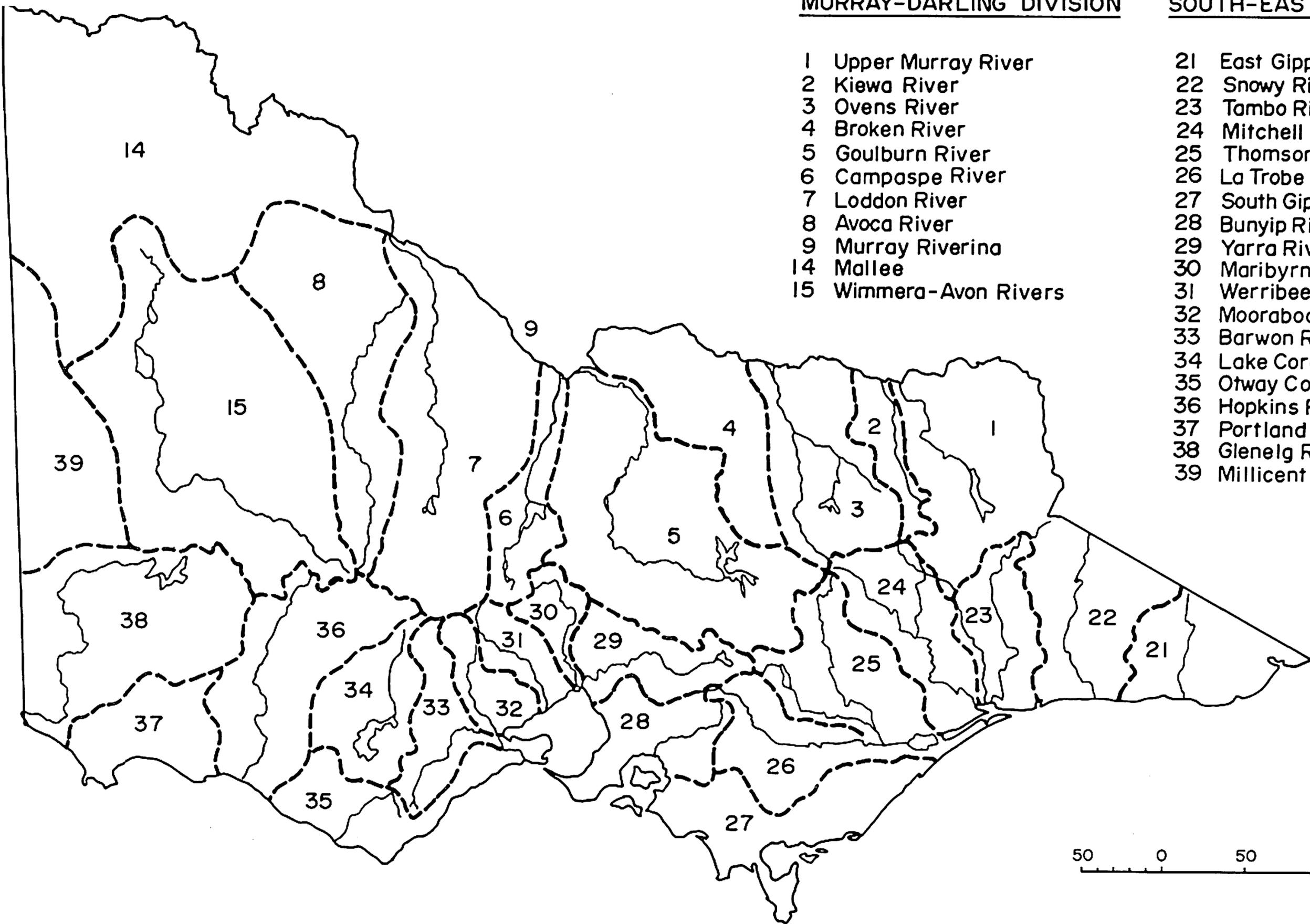
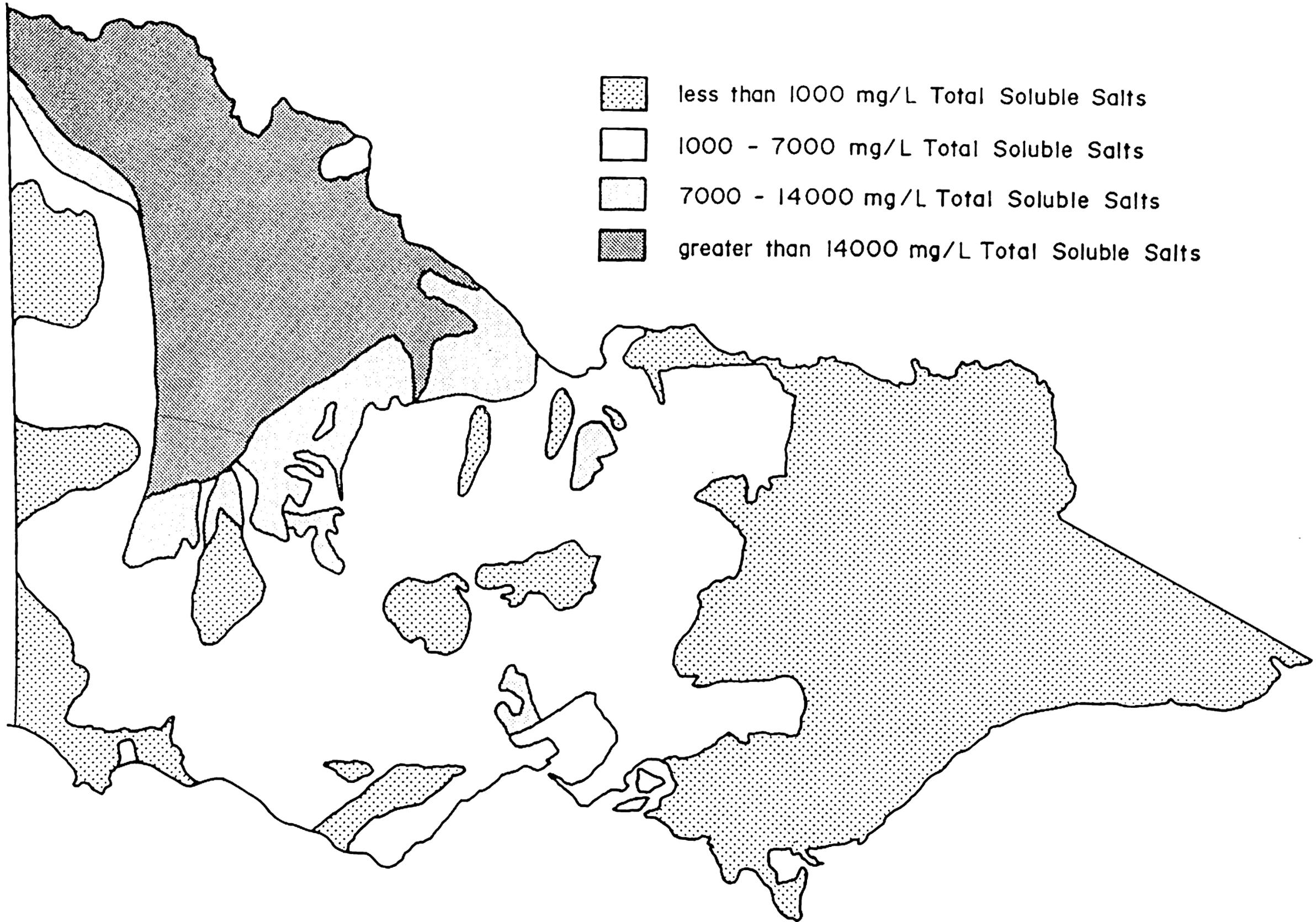


Figure 6. River Catchments and Surface Drainage Basins in Victoria



Source: Adapted from Department of Minerals and Energy  
"Groundwater Resources of Victoria"

Natural expressions of salinised land (primary salinity) in Victoria include salt flats where the watertable of the salty groundwater is sufficiently close to the surface to affect the vegetation, and salt pans which represent the more or less permanent outcrop of the watertable. The combined area of these forms of natural salinity within Victoria has been estimated to be about 100,000 hectares. (Standing Committee on Soil Conservation, 1982).

Another form of natural salinity is the coastal salt marsh where the saline watertable, directly affected by the sea, is close to or at the surface. The area of these along the Victorian coastline has not been estimated.

## CHAPTER TWO

### TYPES OF SALINITY PROBLEMS AND THEIR CAUSES

#### 2.1 INTRODUCTION

Salinity problems that are caused, directly or indirectly, by human activities are referred to as induced or secondary salinity. They are thereby distinguished from natural or primary salinity, which was described in the previous chapter.

In parts of Victoria, human activities have resulted in elevated levels of salt in the groundwater system, rivers and streams, lakes, wetlands and reservoirs, and in the soil of irrigated and non-irrigated agricultural regions. As a result, the functions of these resources have been impaired. The principal causes of these salinity problems are activities which contribute to the mobilisation, accumulation or exposure of salt which is already in the landscape. Of particular importance are those activities which cause either watertables to rise, the diluting capacity of water bodies to be reduced, saline subsoil to be exposed or saline wastes to be discharged. These factors are illustrated in Figures 8 and 9.

In this chapter, the foregoing types of induced salinity problems are described and the available data on their causes summarised.

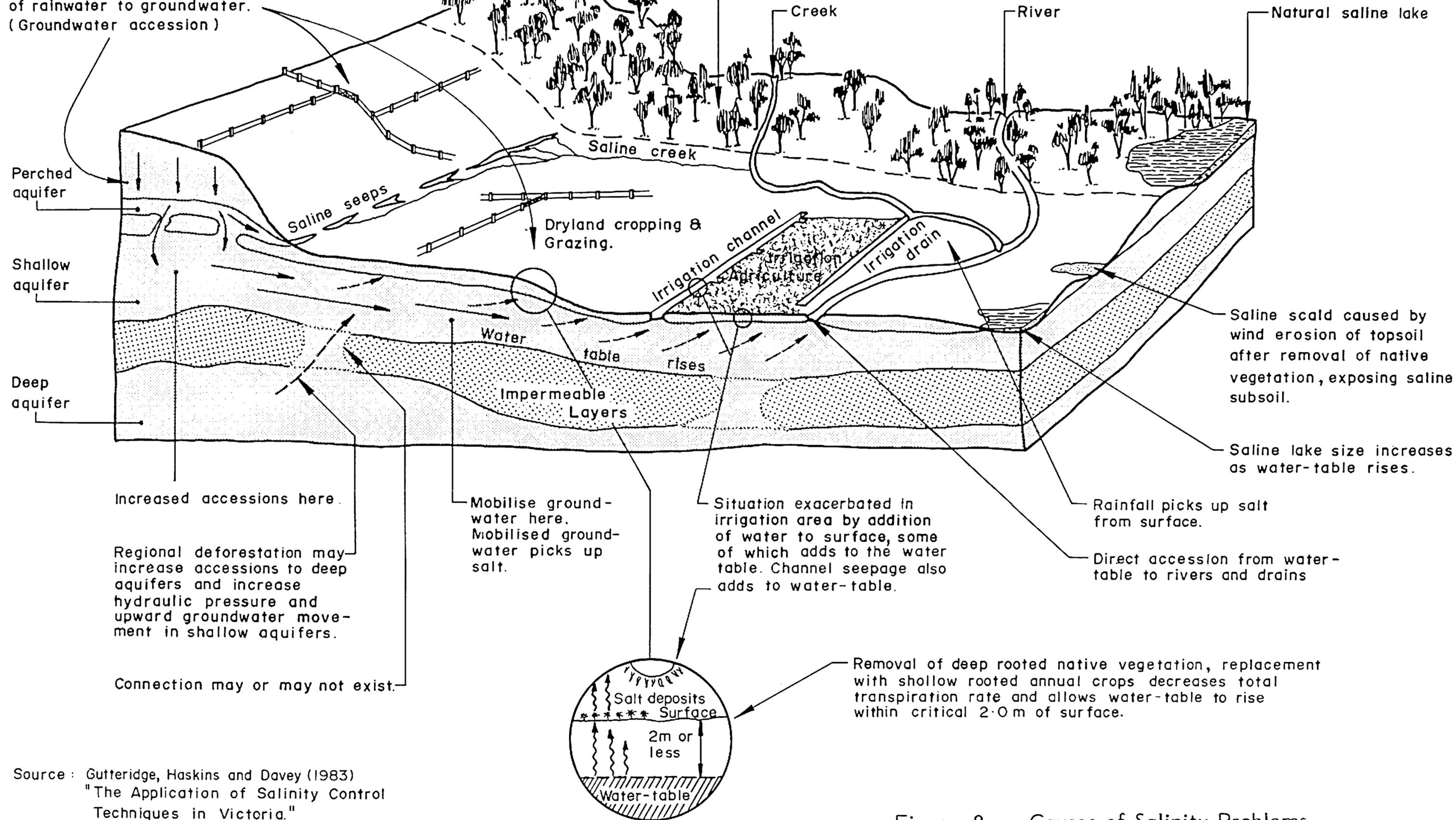
#### 2.2 GROUNDWATER

Figure 9 indicates the important role of groundwater in most salinity problems. A rise in the salinity of groundwater can directly impair the usefulness of the water for agricultural and other purposes. As described in the following sections of this chapter, it can also contribute to the salinity of surface water bodies and of soil to which the groundwater discharges.

Human activities can cause the salinity of groundwater to increase by (a) affecting the rate of recharge and associated movement of soluble salts from the unsaturated strata, (b) causing saline groundwater in one aquifer to mix with groundwater of a lower salinity in a neighbouring aquifer, or (c) introducing saline wastes into the groundwater system.

to groundwater (by direct interception and re-evaporation on foliage and by transpiration) to volumes that can be removed by regional groundwater flow.

Dryland grazing, removal of native vegetation permits increased flow of rainwater to groundwater. (Groundwater accession)



Source: Gutteridge, Haskins and Davey (1983)  
 "The Application of Salinity Control Techniques in Victoria."

Figure 8. Causes of Salinity Problems.

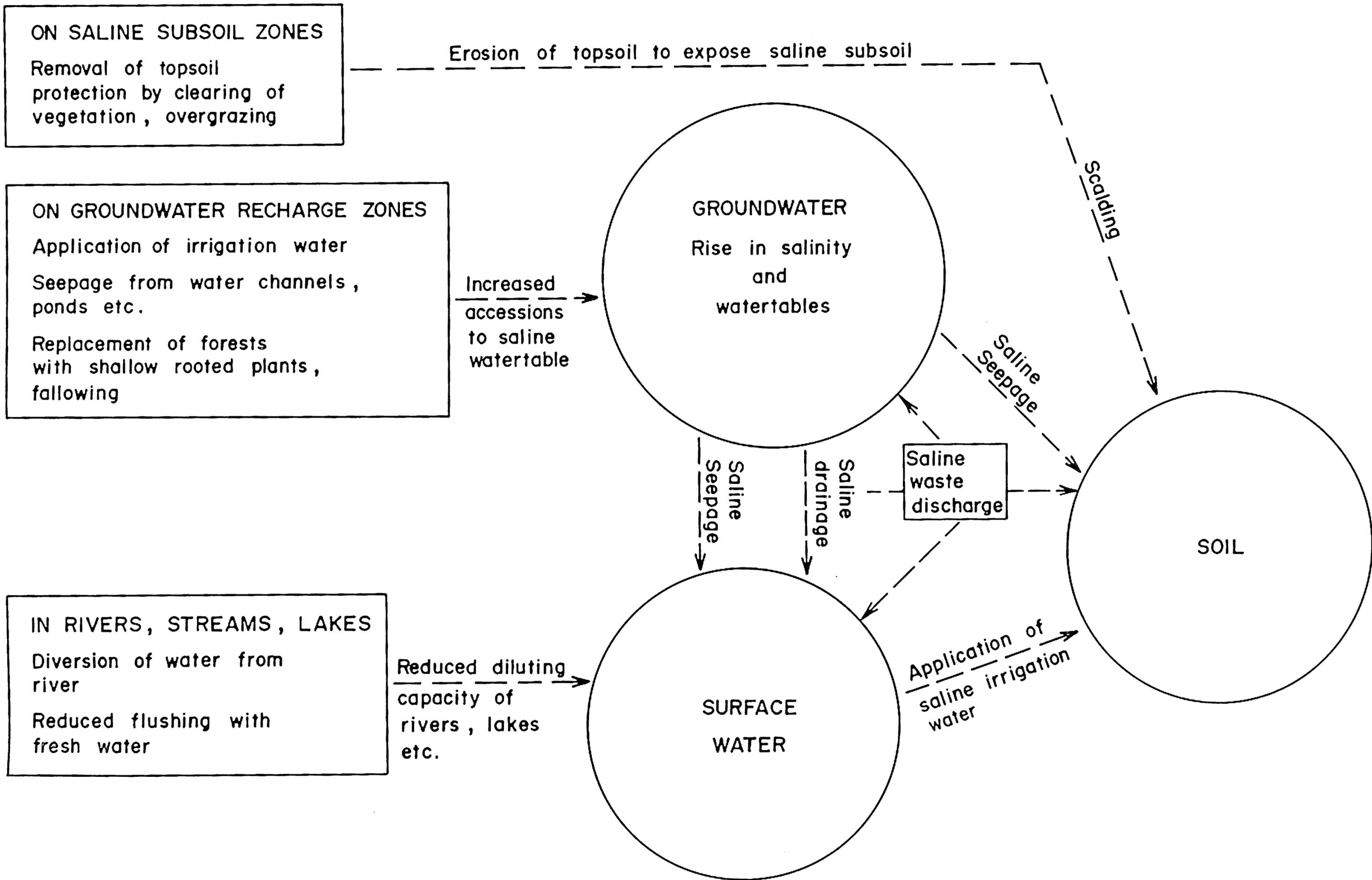


Figure 9. Principal Causes of Induced Salinity

The Committee has concerned itself in particular with the first of these factors because of its widespread significance. Factors which increase the rate of recharge to the groundwater are discussed in Sections 2.6 and 2.7.

## 2.3 RIVERS

### 2.3.1 General

Rising salinity levels in rivers and streams can reduce their usefulness as a supply of water and can also affect aquatic biota.

Increases in the concentration of salt in rivers and streams can be due to any of the following factors:

- \* Natural seasonal variations in river flow and in the relative proportions of groundwater and surface inflows.
- \* Increased discharge of salt in surface water or groundwater following catchment clearing and other land use changes.
- \* Discharge of saline wastewater from, for example, irrigation areas, industrial activities, and sewage treatment plants.
- \* Reduced dilution as a result of upstream diversion of water.
- \* The construction of weirs and dams on the river causing a rise in water level with increased pressure on the underlying groundwater which may force saline groundwater into the river downstream.

The Committee has considered the specific cases of salinity in two river systems:- the River Murray and the Barwon River.

### 2.3.2 River Murray

The contributions of salt from various sources are shown in Figure 10 and Table 2.1. The information has been drawn from ACIL Australia

(1983), Maunsell and Partners (1979) and evidence presented by officers of the South Australian Government.

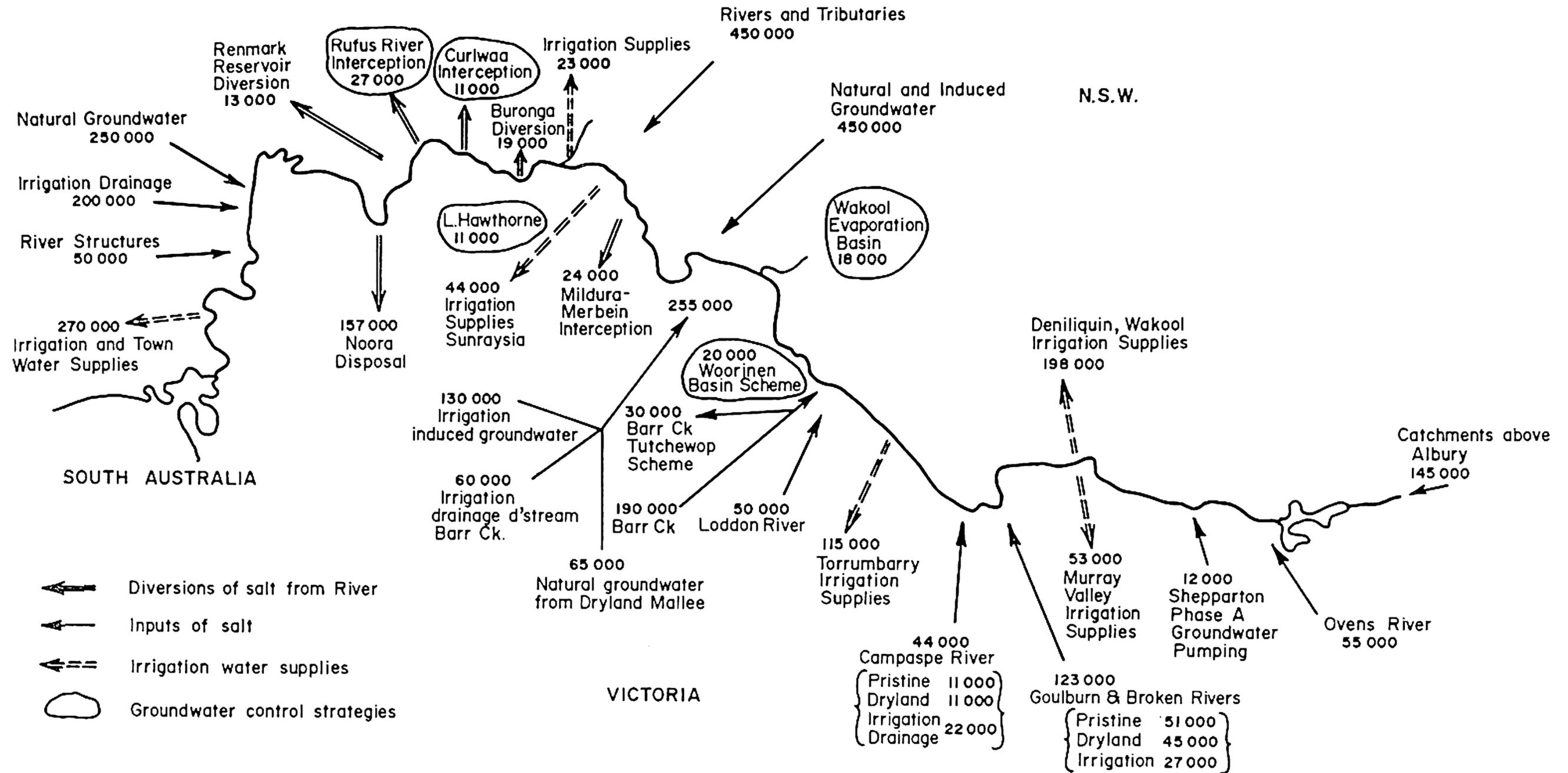
TABLE 2.1

Indicative Salt Load Budget for River Murray

Thousand tonnes per annum

	Input	Removal (Irrigation & Town) Supplies	Prevention
CATCHMENTS ABOVE ALBURY	145		
GOULBURN, CAMPASPE, BROKEN, OVENS RIVER CATCHMENTS			
- Natural	117		
- Natural & Irrigation induced	129	53	
LODDON & BARR CREEK CATCHMENTS			
Natural & Irrigation induced	210	115	30
MALLFF & SUNRAYSIA			
- Natural	65		24
- Irrigation induced	190	44	31
NEW SOUTH WALES			
Natural & Induced	900	221	48
SOUTH AUSTRALIA			
Natural & induced	500	270	197

Sources: See Figure 10



Sources: -1978-81 Average Annual Salt Inputs  
 -Maunsell & Partners, 1979  
 -SRWSC Victoria (K. Collett)  
 -S.Australian Engineering & Water Supply

Figure 10. Indicative Annual Inputs and Diversions of Salt from River Murray in tonnes/annum

All tributaries of the River Murray add salt because of natural processes such as weathering. In the highlands, a total of 200,000 tonnes of salt are contributed annually by catchments above Albury and the Ovens River. However, because the amount of salt is diluted with large volumes of water the salinity levels of the water are low. The pristine catchments on the Campaspe and Goulburn contribute up to 62,000 tonnes salt per annum. The natural contribution of salt in the groundwater which flows into the river is substantial. In the Mallee region alone, 65,000 tonnes are contributed each year. Similarly in South Australia, the groundwater flow system allows 250,000 tonnes to seep in annually.

As a consequence of agricultural activities, the inflows of salt have increased. The major increases have been due to irrigation drainage, and seepage from groundwaters under irrigation areas. In Victoria, about 400,000 tonnes of salt could be attributed to all the irrigation districts. This total includes the major point source, Barr Creek, which contributes 160,000 tonnes of salt to the River Murray per annum.

New South Wales contributes 900,000 tonnes of salt per annum through natural and induced flows of salt in groundwater and rivers. South Australia contributes 200,000 tonnes of salt from irrigation drainage and another 50,000 tonnes due to the effect that river structures have on local groundwater flow.

The relative influence of all these contributions on the water quality in South Australia depends upon the point and concentration of discharge and the intervening diversion of water from the River Murray. This is currently being assessed by the River Murray Commission.

### **2.3.3 Barwon Region**

In its submission to the Committee, the Geelong and District Water Board outlined the salinity problems of the Barwon region. Stream salinisation is a widespread phenomenon throughout the Barwon

region which contains a number of remnant lakes and salt pans. A majority of these lakes have no natural outlets so have become saline due to evaporation. Saline springs and swamps are also common and widespread clearing of land since settlement may have aggravated the salinity problem. In the middle reaches of the Barwon River, salt loads are further increased by receipt of saline drainage from two schemes (Lake Colac/Lough Calvert Scheme and Lake Corangamite Reclamation Scheme) constructed to relieve flooding around the margins of lakes in the Colac district. Thus salinity in the Barwon River system originates from diverse sources, with 41% of the total salt load originating from the drainage schemes.

Other sources of salinity are the Ballarat Sewerage Authority and groundwater pumping from the quarry of Australian Portland Cement Limited. Both of these organisations have Environment Protection Authority licences.

## 2.4 LAKES AND WETLANDS

Lakes and wetlands can be influenced by secondary salinity as a result of increased inflows of saline surface water and groundwater.

In addition, evaporation of water from lakes concentrates the salt content. Some wetlands only occasionally fill with floodwater and then evaporate to dryness in the intervening years. Salt accumulation can occur in these wetlands if they are not flushed out during floods. Specific cases are described in Section 3.4.

## 2.5 RESERVOIRS

As changes in land use from forest to agriculture can modify stream salinity so too can these changes modify the salinity of water stored in reservoirs. Salinity in stored water can increase because of evaporation if the storage basins cannot be adequately flushed.

A particular example is the salinity of water in the Rocklands Reservoir which is a major source of water for the Wimmera - Mallee Stock and

Domestic supply system. Water quality monitoring indicates that the average salinity level is 350 mg/L but can rise to 900 mg/L in years of low inflow.

## 2.6 SOIL SALINITY IN DRYLAND AREAS

### 2.6.1 Saline Scalds

Saline scalds are areas of land with reduced production, in which a naturally saline subsoil has been exposed as a result of erosion of the topsoil. In Victoria, saline scalds occur in the undulating areas of the Mallee.

Erosion results when clearing of vegetation, overgrazing, or inappropriate cropping practices leave the topsoil unprotected thereby allowing the fine sands to be easily blown or washed away.

### 2.6.2 Saline Seepage

#### Expression

Saline seeps occur when, as a result of man's activities, saline groundwater rises sufficiently close to the surface of the land to enable evaporation of the groundwater with a resulting accumulation of salts in the soil. The seeps typically occur in depressions in the land, at the break of slope on hillsides, adjacent to natural drainage lines, or above outcrops of impermeable strata.



An extensive saline seep in Western Victoria

The immediate consequences of seepage salting are described in ACIL Australia (1983). Symptoms of incipient salting are a lack of vigour of more sensitive crops or pastures leading to a decrease in plant yield. The more productive species are then replaced by weed species that are more tolerant to salt. Areas of incipient salting may also be recognised by progressive dieback of tree species. As the seep develops, most of the ground cover is destroyed and high concentrations of salts develop at and near the soil surface. The base salt patch can continue to grow and, without the protection of vegetation, becomes vulnerable to soil erosion.

### Causes

The Committee is aware that the development of saline seeps has been attributed to two different mechanisms. In the first, the seep is viewed as the outcome of rising regional or localised watertables. In the second, the seep is seen to be the result of local rainfall which, after entering the soil, is prevented from further downward movement by a "hardpan". Water flows over this layer to the seepage zone. The hardpan layer may be naturally occurring or a layer of reduced permeability resulting from soil compaction. On the basis of the information provided to the Committee by the Soil Conservation Authority the first mechanism is clearly more widespread in Victoria. However, the Committee accepts that the second mechanism may also operate in parts of the State and would welcome further investigation into this aspect.

The groundwater involved in seepage salting can be the regional groundwater where recharge can occur many kilometres from the discharge zone, or local groundwater where the recharge and discharge zones can be close together. The regional groundwater tables can be complex with several aquifer systems implicated and covering hundreds of square kilometres, whereas local perched water tables may involve only one sand dune or part of a hillside. Within catchments of both sizes there are often areas with high permeability that act as principal areas for groundwater recharge.

In both cases, seepage salting is the result of increased water accessions to the groundwater which has upset the pre-settlement hydrological balance.

The locations in Victoria where saline seepage is likely to be associated with either regional or localised groundwater systems have been assessed by the Soil Conservation Authority and are shown in Figure 11.

The following specific causes of increased recharge to groundwater bodies have been suggested to the Committee:

(a) Clearing of Trees

Evidence that the clearing of forests has been the predominant cause of seepage salting is reviewed in ACIL Australia (1983) and has been supported by the Soil Conservation Authority and Forests Commission. The removal of trees and replacement by some agricultural vegetation results in reduced utilisation of stored soil moisture, thereby permitting increased accessions of rain to the groundwater. The effect is exemplified in the catchment of Axe Creek, near Bendigo, for which calculations by Williamson (1983) indicate that accessions to the groundwater increased seven fold following clearing.

The extent of clearing following European settlement in Victoria is illustrated in Figure 12. In the western half of Victoria possibly less than 15% of the original forest cover remains. The length of time between clearing and the appearance of saline seeps depends upon many factors, which include the hydrologic characteristics of the cleared area, the intrinsic nature of the aquifer involved, the remaining capacity of the unsaturated zone of the aquifer, the salt content of the groundwater and the distance between recharge zone and seep. While response times of several decades might be expected in small, localised aquifers, in regional aquifers

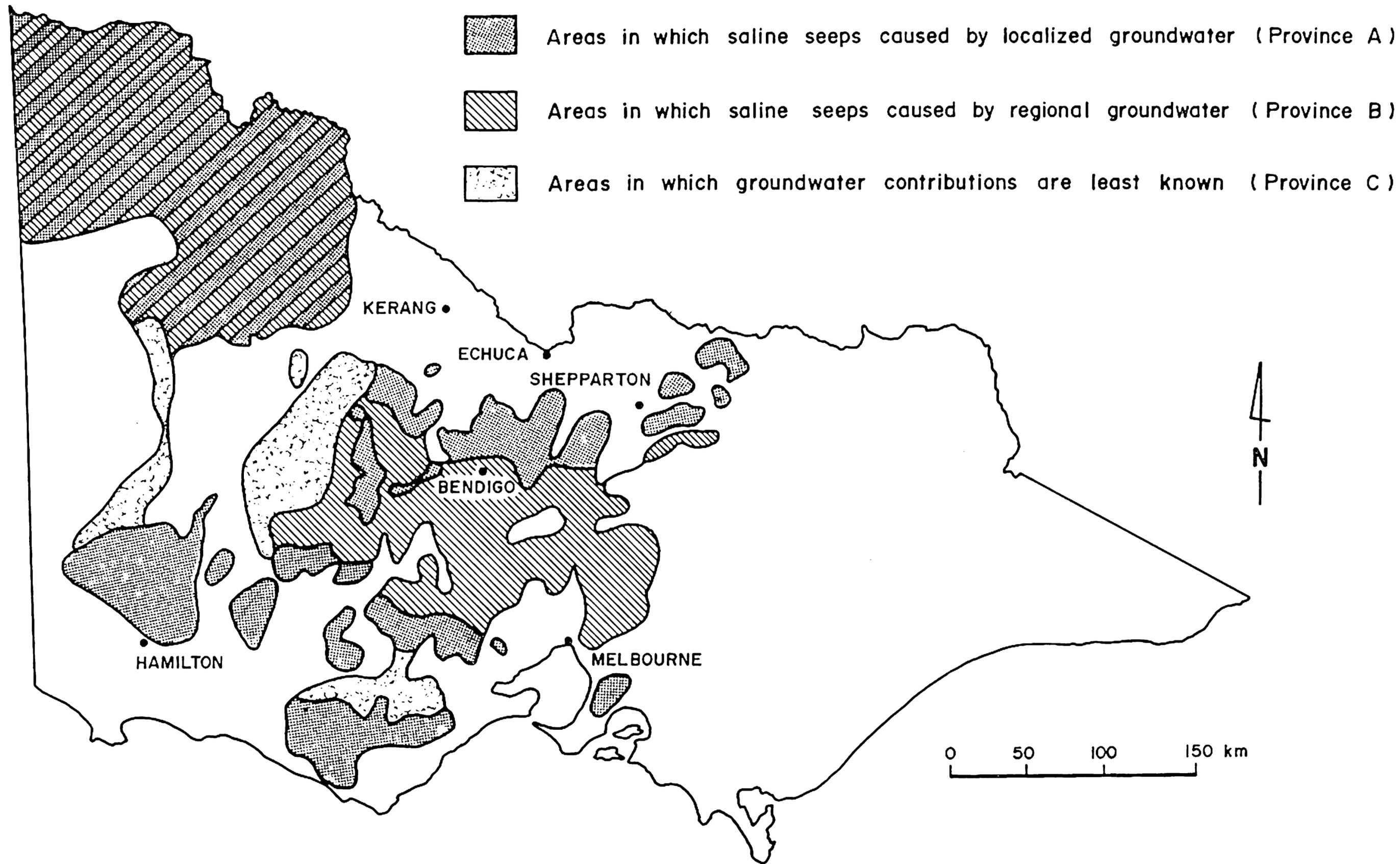
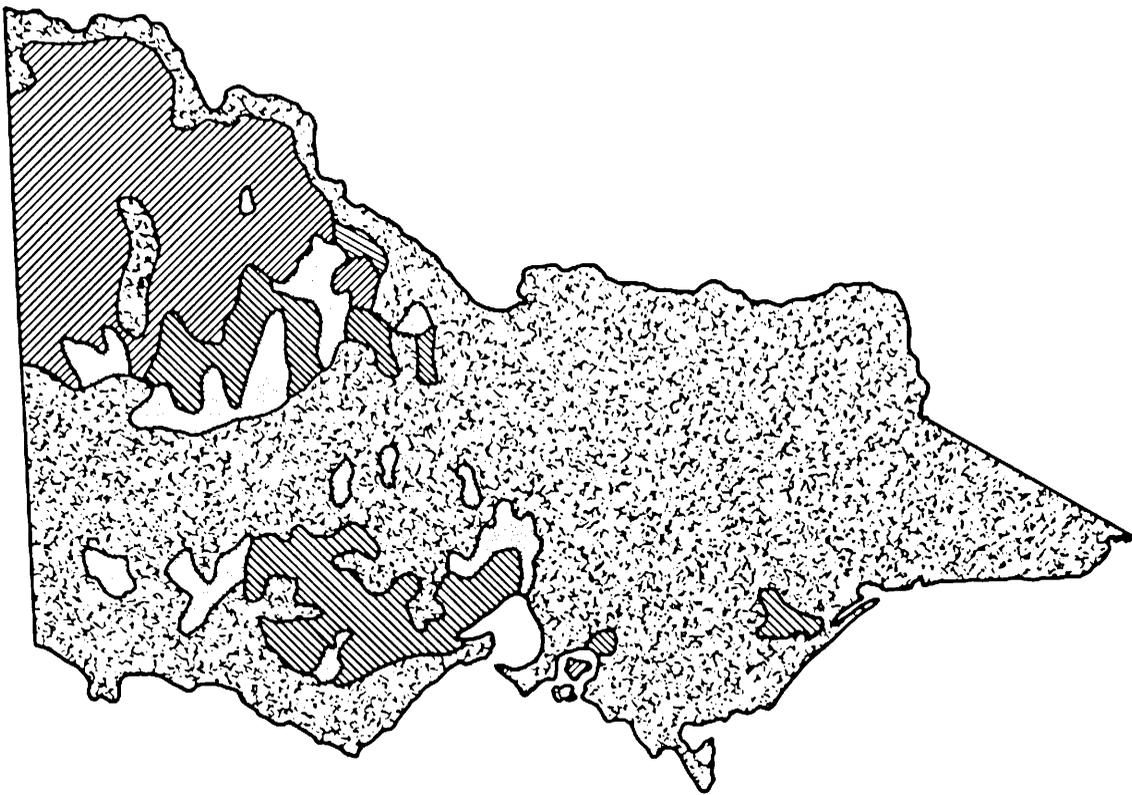
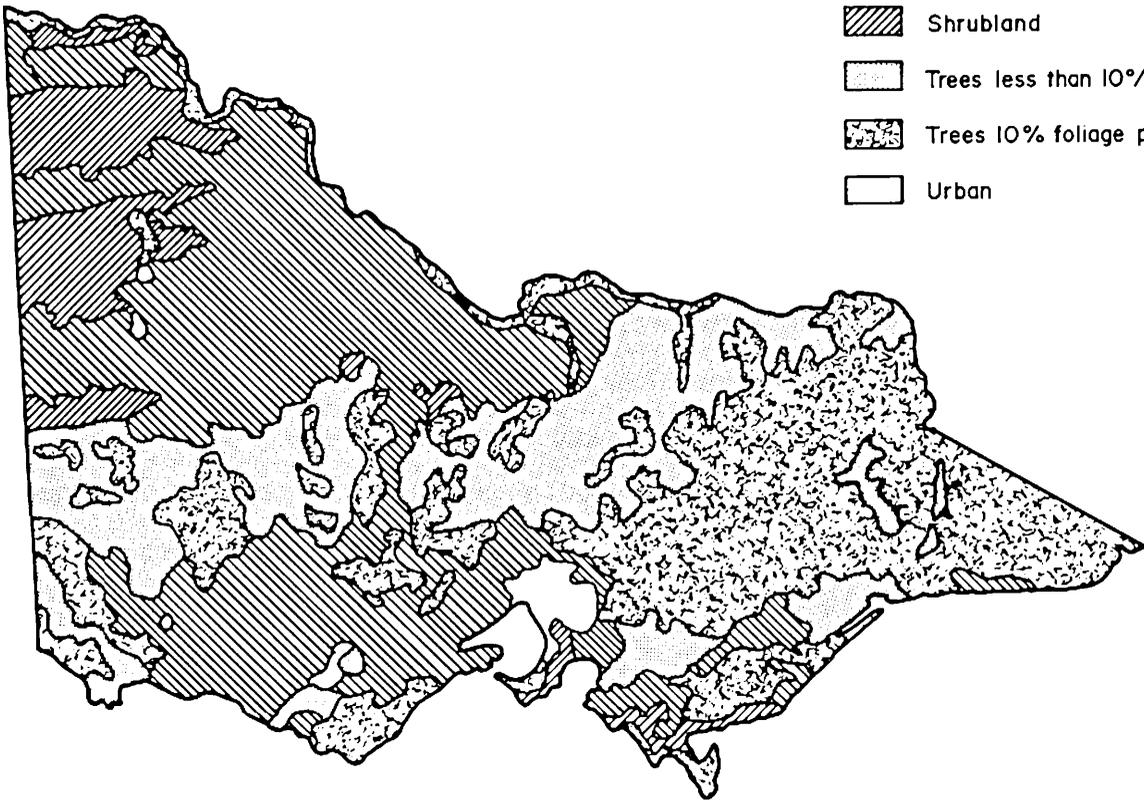


Figure 11. Possible Influence of Groundwater Systems on Dryland Salting



VEGETATION PRIOR TO EUROPEAN SETTLEMENT

-  Grass or crops
-  Shrubland
-  Trees less than 10% foliage projection
-  Trees 10% foliage projection or more
-  Urban



VEGETATION IN 1980

Source: Forests Commission of Victoria

Figure 12. Changes in Distribution of Vegetation Types

the period may be substantially longer. Therefore, clearing of the Northern Slopes of the Dividing Range almost a century ago may only now be resulting in dryland salinity.

(b) Agricultural Practices

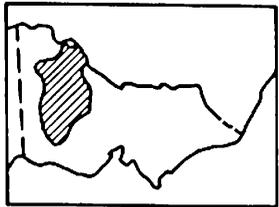
The amount of rainwater utilised by dryland agricultural areas before it enters the groundwater depends on the type of pastures or crops, the methods of cultivation, the density and species of the plants, and the topography of the land. The attention of the Committee has been drawn in particular to the significant increase in groundwater recharge that is considered to be caused by extensive periods of fallowing, the introduction of shallow rooted agricultural plants, and ponding of water in depressions on the land. However, the Committee has not received any quantitative information on accessions to the watertable that may be associated with these factors. Such information is important to enable not only an adequate assessment of the existing causes of saline seepage but also the development of counter-measures.

(c) Leakage from Water Channels

Some areas of seepage salting in the Mallee are caused by leakage from the earthen channels which supply stock and domestic water to the region. The location of the channels is shown in Figure 13. This water supply scheme is one of the most extensive stock and domestic systems in the world. It consists of 16,000 kilometres of open channels which transport water northwards from the Rocklands Reservoir and other smaller storages in the Grampians region. It supplies 52 towns, 12,000 rural properties and serves a population of about 82,000 people. The Committee has received reports of saline seeps of up to 25 hectares in area adjacent to the channels. Of the 165,000 MI of water released each year to the channel system, only about 43,000 MI is delivered by the channel system, the remaining 74% either evaporates or seeps to the ground. In some localities, 90% of the water may be lost.

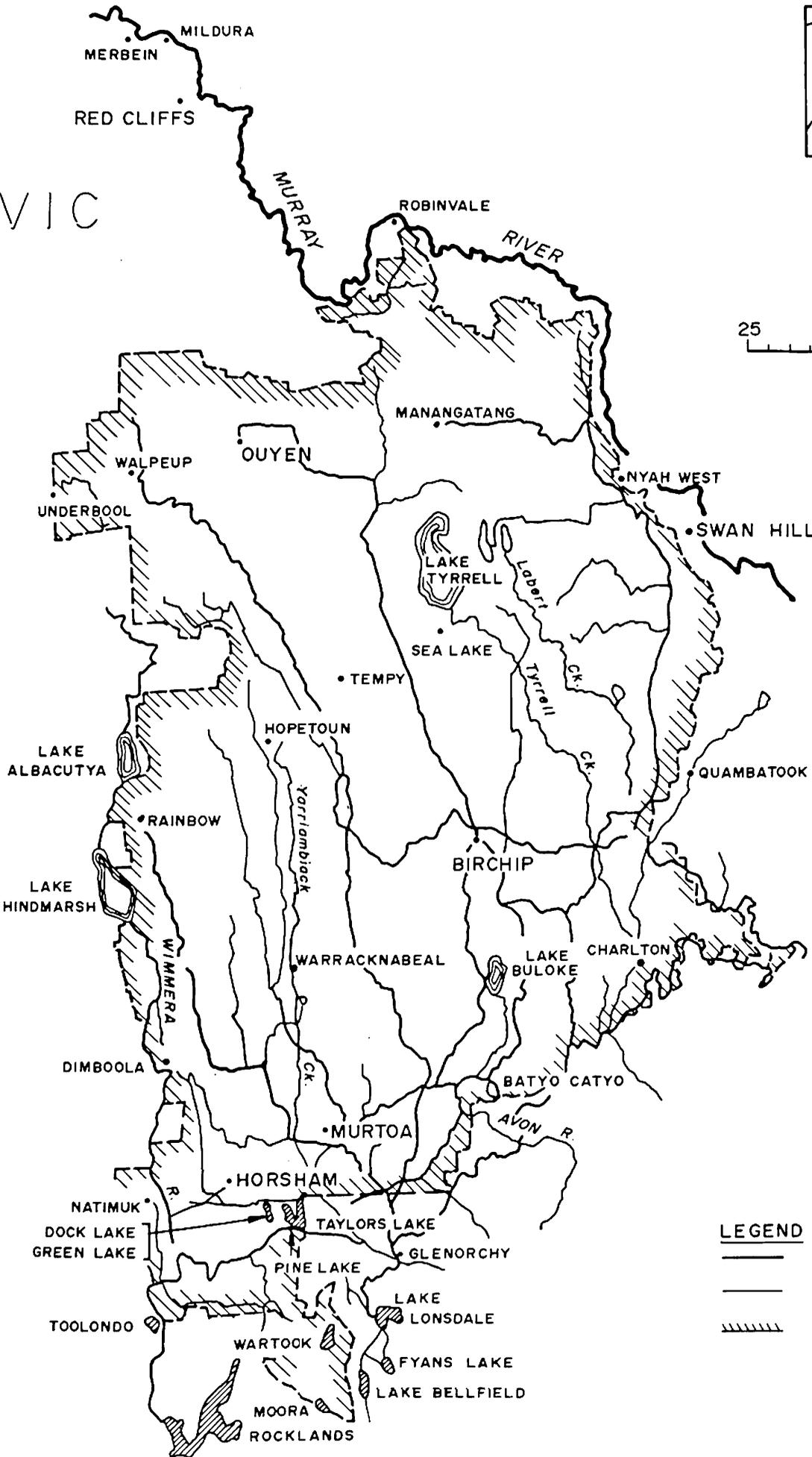
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VIC



KEY PLAN OF VICTORIA

25 0 25 50 km.



**LEGEND**

-  Main Channels
-  Secondary Channel
-  System Boundary

Figure 13. Wimmera-Mallee Domestic and Stock Water Supply System

(d) Urban Development

Although predominantly a problem in rural areas, saline seepage can occur in built-up regions. An example, brought to the notice of the Committee through its municipal survey, has been the development of saline seepage patches in North Geelong. A reason for the rise in watertable was the greater percolation to the groundwater when the construction of streets, sewers and other works disrupted the heavy clay subsoils and increased the permeability. Other construction works may also have impeded the natural flow of groundwater to adjacent gullies.

(e) Climatic Change

The role of long-term trends in rainfall as a possible cause of dryland salinity problems in Victoria is discussed in ACIL Australia (1983). There is no evidence of trends that could account for the widespread occurrence of seepage salting. Affected areas increase rapidly after extremely wet years such as 1956, 1963, 1973/74. Dry years do not reverse the process. The Soil Conservation Authority has noted, however, that temporary improvements following dry periods have been recorded in some areas.

## 2.7 SOIL SALINITY IN IRRIGATION AREAS

### 2.7.1 Expression:

In irrigation districts, salt can affect agricultural production as a result of either a rising saline watertable or the application of excessively saline irrigation water. The major problems in Victoria are the results of high watertables. Irrigation water is generally low in salinity. (However in the past, crop losses have been recorded in the Sunraysia Region due to the poor quality of water drawn from the River Murray.) There is now some concern that the re-use of drainage water from irrigated paddocks could contribute to a long-term progressive increase in groundwater salinity.

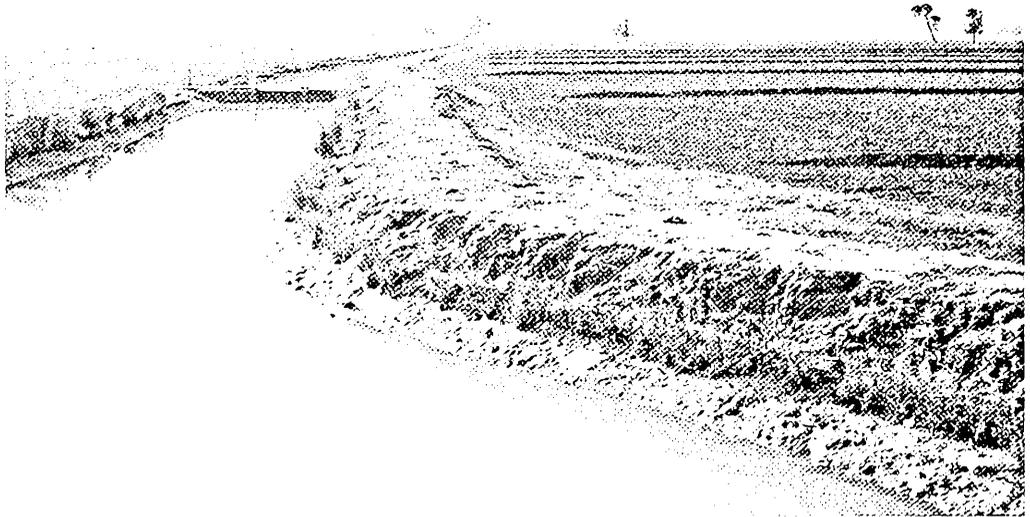
The major problems with high watertables occur in the Kerang and Shepparton regions of the Goulburn-Murray Irrigation District. The problems have been avoided in most of the Sunraysia Region by the use of sub-surface drainage. Small isolated salt-affected areas have been reported in other irrigation areas but they are not considered to be a major problem.

Watertables will rise if the volume of water entering the unconfined aquifer beneath the irrigation area exceeds the volume of water that is being discharged either within or outside the area. A reduction in plant production may occur when a saline watertable is 1 - 2 metres below the root zone. However, if more irrigation water than that required for plant growth is applied, sufficient salt may be leached away from the roots to avoid any salt accumulation within the soil profile. Where saline groundwater is close to the surface, intensely irrigated areas are likely to be less salt-affected than adjacent paddocks that are infrequently irrigated. Once saline watertables reach a level of less than two metres below natural surface, evaporation can concentrate salts near the soil surface.

### 2.7.2 Causes

The causes of the high watertables in the Kerang and Shepparton regions have been reviewed in ACIL Australia (1983) and discussed in departmental submissions to the Committee. At the Community Conference, which was sponsored by the Committee in February, 1984, it was evident that the reasons for the high watertables remained a contentious issue. As a result, the Committee organised a technical seminar to assist in further defining the current state of knowledge. Thirteen papers were presented and discussed at the seminar by specialists in irrigation, under the chairmanship of Professor T. McMahon, Professor of Agricultural Engineering,

University of Melbourne. The following observations are made by the Committee based on the information provided to it and on Professor McMahon's report on the seminar.



Earthen Irrigation Channels in Northern Victoria

The depth to the watertable depends upon the balance between the inflow and outflow of water to the shallowest aquifers. Inflow may occur by the downward percolation through the soil of rainfall and irrigation water, and by leakage of water from irrigation channels and water storages. There may also be an upward contribution from a deeper aquifer. Outflow may take place by evapotranspiration to the atmosphere, subsurface tile drainage, groundwater pumping and lateral discharge into streams and drains. It may also occur by downward flow into unsaturated parts of deeper aquifers.

In seeking information on the relative importance of each of these factors, the Committee has been surprised and alarmed at the limited amount of relevant field research which has taken place since the problems in the irrigation regions were observed or predicted several decades ago. Some useful field data has, however, resulted from experimental investigations by staff of the Department of Agriculture and Water Commission into salt balances and water accessions in parts of the Shepparton Region and at the Kerang Tile Drainage Experimental Area, Kerang Research Farm and Swan Hill Irrigation Research Farm. These organisations and the Department of Minerals and Energy have helped characterize the hydrogeological phenomena in selected areas. The principal concern in applying the results of the field studies is that, because they were undertaken in only a few locations, under controlled conditions and over limited periods of time, they are unlikely to be representative of the irrigation regions as a whole.

Using the foregoing data coupled with specialist judgement, analyses have been undertaken by government departments and their consultants which have provided further quantification of the various accessions to the watertable. Amongst these analyses, have been the development of a computer model of water and salt flows in the Barr Creek catchment of the Kerang Region by consultants to the Rural Water Commission, and modelling of the regional groundwater flows by the Department of Minerals and Energy.

These observations and analyses have led to a range of estimates for the accessions to the watertable. They are shown diagrammatically in Appendix 7 and can be summarised as follows:

(a) Irrigation and Rainfall

Rainfall is a major contributor to the groundwater in the Shepparton region. Up to 80% of the total accessions to the groundwater may be from this source. Irrigation practices on Lemnos loam, a duplex soil type covering about 70% of the area may only contribute about 10-20 mm per year below the root zone. The Committee is aware that data is limited and other sites and soils need to be investigated.

On the uniform cracking clays of the Kerang region, accessions due to irrigation of perennial pasture are 30-50 mm per year. The contributions from rain have not been directly measured in the Kerang region. However, the results of mathematical modelling for the Barr Creek Catchment Study have indicated that irrigation makes a larger contribution to the groundwater than rainfall. Irrigation of annual pastures on the Kerang soils is estimated to contribute 10 mm per year to the groundwater with a large proportion occurring during the first irrigation in autumn because of large cracks in the dry soil.

(b) Leaching and Irrigation Efficiency

Experiments in the Shepparton region indicate that the accessions to the groundwater do not substantially exceed the minimum amount of water necessary to ensure adequate moisture for plant growth and leaching of salts. The extent to which these observations are representative of the region as a whole is uncertain.

In the Kerang region, no direct field observations have been made but the Barr Creek Study and experiments at Swan Hill

suggest that leaching fractions of 5-15% of total applied water are applicable. Results from Swan Hill indicated that lighter soils have higher accessions to the groundwater than do heavier clay soils.

(c) Channel Seepage

Channel seepage, which varies considerably along a channel and between channels, due to soil types, is estimated to be contributing approximately 10 mm per year averaged over the whole Shepparton region. This is about 10% of total accessions to the water table. This seepage value has also been applied to Water Commission channels in the Kerang region although no quantitative data has been supplied. Farm channels were considered to leak only a relatively small amount of water.

(d) Deep Regional Aquifers

The contribution of the regional aquifers to groundwater levels within irrigation districts varies with locality. At present in the Goulburn and Campaspe Valleys, of which the Shepparton Region is part, the regional aquifers are acting as sinks for rainfall and irrigation accessions but their capacity to do so is being reduced. At present 16-40 mm per annum is entering these deep leads from shallower aquifers. However, the levels have only a limited capacity to accept further water. The implication of this is discussed in Chapter 4.

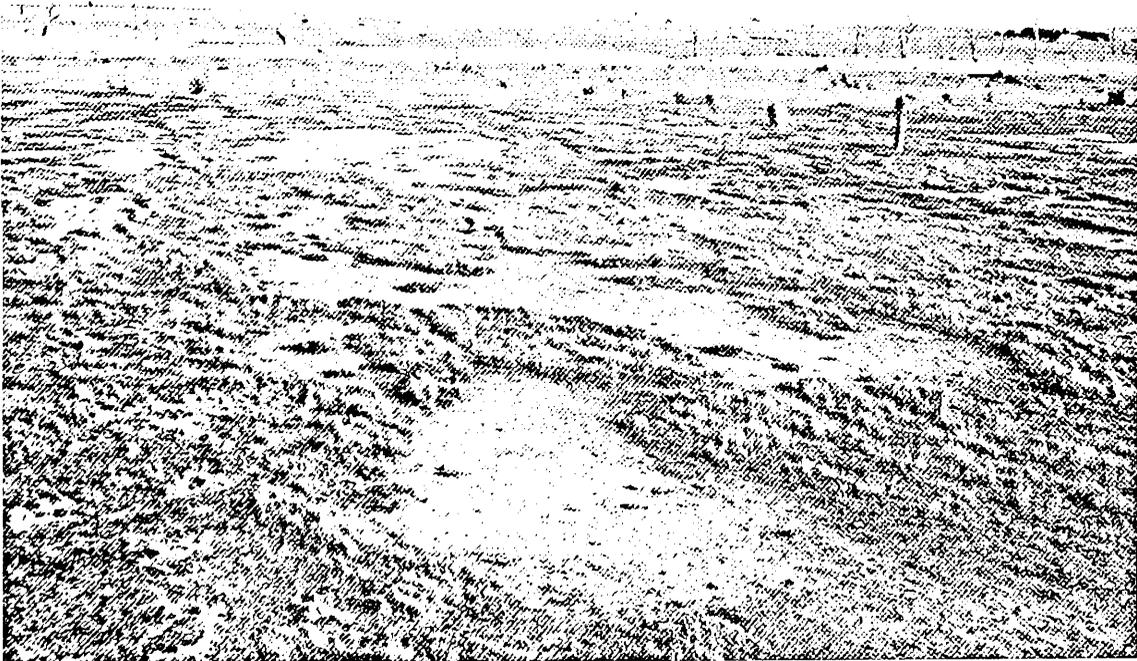
The Loddon, West Loddon and Murray Deep Lead system, part of which is beneath the Kerang Region, has, however, reached this final state and is now acting as a discharge area for accessions from both the highlands and plains. The deep lead aquifers add 6-40 mm/year to the shallow water tables under the irrigation area. These accessions are either evaporated or lost in drainage systems such as the Barr Creek.

## 2.8 CONCLUSIONS

- (i) Before European settlement, salt affected soils, salt pans, salt marshes, saline streams and saline groundwater were a feature of the environment in the western half of Victoria. The present salinity problems have resulted largely from human activities which, in the brief period since European settlement, have modified the natural distribution of the salt.
- (ii) The major reason for many salinity problems of soil and water has been the rise in the levels of watertables in parts of northern and western Victoria. This has been caused by practices which have increased the rate of recharge of water to the groundwater thereby upsetting the hydrological equilibrium which previously existed. Such practices on the recharge zones of aquifers have included the replacement of forests with agricultural activities which intercept less rainfall, the construction of unsealed water storages and channels which allow water to leak to the groundwater bodies, and the introduction of irrigation.
- (iii) The increased water flowing through the surface layers dissolves salt which has been stored there during past geological ages and transports it to the groundwater system. As the watertables rise, the saline water may discharge at a greater rate to streams or be brought sufficiently close to the surface of the land to evaporate, leaving concentrated salts in the soil.
- (iv) In dryland areas this had led to the development of saline seeps and contributed to the salinity of streams, water storages and lakes. While much of the dryland salinity is a consequence of past practices, particularly forest clearing, significant contributions to rises in watertables may also result from such ongoing activities as:
  - removal of trees
  - extensive fallowing and use of shallow-rooted plant species in agriculture

- leakage from the Wimmera Mallee stock and domestic channel system.
- (v) In irrigated areas, accessions to the watertables from rainfall are supplemented by accessions of irrigation water and seepage from the earthen channels which distribute the water. Irrigation water, by reducing the capacity of the upper layers of soil to absorb further water, can predispose the land to accessions from rainwater. Ponding of water on paddocks and in storage basins can further add to the accessions.
- (vi) The watertables in some of the irrigation regions of northern Victoria are also influenced by pressure levels in the underlying deeper regional aquifers, the deep leads. These levels have risen as a result of accessions, not only from the irrigation areas but from the dryland areas to the south. As a result, the Kerang irrigation region is now a zone of regional groundwater discharge and water from the shallow aquifers can no longer escape to the deeper groundwater system. In the Shepparton Region, the deep leads can still accept recharge from above, but at a decreasing rate.
- (vii) There is a lack of field measurements of the relative contributions to the watertable in the irrigation regions from rainfall, irrigation practices, regional groundwater flow and seepage from channels and ponds.
- (viii) The available data with which to assess the efficiency with which farmers apply the irrigation water is inadequate. The limited measurements suggest that the excess of water which reaches the watertable beyond that required to leach salts from the root zone, is low in the Shepparton Region but could be significant in the Kerang area.
- (ix) Other reasons for salinity problems include:
  - . the exposure of saline subsoil by erosion to form salt scalds,

- . activities which reduce the capacity of water bodies to dilute their salt content,
  - . discharge of saline wastes.
- (x) The increase in the salinity of the River Murray with distance downstream is a result of both natural and induced inflows of salt. Of the total average inflow from Victoria of 700,000 tonnes of salt each year, over half is induced, largely as a result of irrigation development in Kerang, Shepparton and Sunraysia regions. Of the induced inflow, about one third comes from the Barr Creek in the Kerang Region. The contribution from salinity associated with rising watertables in the non-irrigated areas of Northern Victoria is uncertain but could be about 10% of the induced inflows. Whilst all of the Victorian sub-catchments of the Murray contribute substantial quantities of salt, the concentrations of the inflows generally increase to the west and the contribution from the discharge of groundwater becomes more significant. About one third of the total inflow of salt from Victoria is diverted back to Victoria in supplies of irrigation water. The relative influence of all these contributions on the water quality in South Australia depends upon the point and concentration of discharge and the intervening diversion of water from the River. This is currently being assessed by the River Murray Commission.
- (xi) Stream salinity is widespread throughout the Barwon Region in southern Victoria. In the Barwon River, increasing concentrations of salt are the result, not only of natural input, but of induced salinity from earlier clearing of forests, saline drainage associated with flood relief schemes on lakes in the Colac district, and discharge from sewage treatment and groundwater pumping.



Salinised land in irrigated and non-irrigated areas

## CHAPTER THREE

### EXTENT

#### 3.1 INTRODUCTION

Information on the extent of the salinity problem in Victoria has been drawn from evidence and submissions received by the Committee, data contained in ACIL Australia (1983), published papers, and results from a survey conducted by the Committee of the 160 non-metropolitan municipalities in Victoria.

A general description of the extent of induced salinity throughout the State and in the River Murray is presented in this report. The Committee has also prepared separate documents in which information received by the Committee on the occurrence of salinity problems in Victoria has been collated on the basis of thirteen groups of surface water catchments.

Table 3.1, from ACIL Australia (1983), summarises the extent of salinity problems.

#### 3.2 GROUNDWATER SALINITY

Water quality varies between aquifers and within the same aquifer so the extent of man-induced salinity changes are difficult to determine.

Groundwater quality declines from the east to the west of the State as was shown in Figure 7. Groundwater in the eastern half of the State is often less than 1000 mg/L and suitable for domestic, agricultural and industrial purposes. In large parts of the western half of the State, salinity levels are above 3000 mg/L making it unsuitable for domestic and industrial uses.

Salinity of groundwater was considered to be a problem by 20% of the municipalities surveyed. Most of these are located in the north and north west of the State. The Committee also heard from landholders about local changes in groundwater salinity associated with irrigation areas, and increased salinity of farm dams and bores. However, the overall extent of increased salinisation of groundwater has not been established.

Table 3.1  
Salinity Problems in Major Drainage Basins of Victoria

Drainage Basin (See Figure 6, page 13)	Stream Salinity	Groundwater Salinity	Dryland Salting	High Water Tables and Secondary Salting
1. Upper Murray River	Fresh	Fresh	Nil	Nil
2. Kiewa River	Fresh	Fresh	Nil	Nil
3. Ovens River	Fresh	Fresh	Nil	Nil
4. Broken River	Fresh	Marginal-Brackish	Minor	Nil
5. Goulburn River	Fresh-Marginal	Marginal-Saline	Severe	Moderate
6. Campaspe River	Marginal	Marginal-Brackish	Severe	Moderate
7. Loddon River	Marginal	Marginal-Saline	Severe	Severe
8. Avoca River	Marginal	Brackish-Very Saline	Severe	Severe
9. Murray Riverina	Fresh-Marginal	Saline	Nil	Severe
14. Mallee	N/A	Fresh-Very Saline	Very Severe	Moderate
15. Wimmera-Avon Rivers	Marginal	Marginal-Very Saline	Very Severe	Nil
21. East Gippsland	Fresh	Fresh	Nil	Nil
22. Snowy River	Fresh	Fresh	Nil	Nil
23. Tambo River	Fresh	Fresh	Nil	Nil
24. Mitchell River	Fresh	Fresh	Nil	Nil
25. Thomson River	Fresh	Fresh	Nil	Nil
26. LaTrobe River	Fresh	Fresh-Marginal	Minor	Nil
27. South Gippsland	Fresh	Fresh	Nil	Nil
28. Bunyip River	Fresh	Marginal-Brackish	Minor	Minor
29. Yarra River	Fresh-Marginal	Fresh-Brackish	Nil	Nil
30. Maribyrnong River	Marginal	Marginal-Brackish	Minor	Nil
31. Werribee River	Marginal	Marginal-Brackish	Minor	Minor
32. Moorabool River	Marginal-Brackish	Marginal-Brackish	Moderate	Nil
33. Barwon River	Marginal	Brackish	Moderate	Nil
34. Lake Corangamite	Brackish	Marginal-Brackish	Severe	Nil
35. Otway Coast	Fresh	Fresh	Minor	Nil
36. Hopkins River	Brackish-Saline	Marginal-Brackish	Moderate	Nil
37. Portland Coast	Brackish	Fresh-Marginal	Minor	Nil
38. Glenelg River	Brackish	Fresh-Marginal	Severe	Nil
39. Millicent Coast	Brackish	Fresh-Marginal	Minor	Nil

Source: ACIL Australia (1983)

### 3.3 STREAM SALINITY

#### 3.3.1 Streams in Victoria

Although information on the current levels of salinity in Victoria's rivers and streams is available, the extent to which the levels are the result of human activities is not clear.

The current distribution of stream salinities is shown in Figure 14. About 15% of the total annual discharge of Victoria's streams is brackish to saline (greater than 600 mg/L) and almost 50% of the total volume of water discharged from streams in south-west Victoria is greater than 1000 mg/L. Salinity associated with surface waters, either in streams, lakes or reservoirs, was the second most widespread problem identified by municipalities. Thirty per cent of all respondents were affected.

Several farmers and representatives of Shires presented evidence of increasing salinities in creeks and rivers. Farmers have indicated the deterioration of water quality in watercourses and the resultant need for careful management or replacement of their water supplies.

#### 3.3.2 River Murray

Of particular concern is the salinity of the River Murray because of its use as a water conduit for domestic, industrial, agricultural and drainage purposes in three States.

The salinity regime has been greatly changed by man's activities and it is only in recent times that diversion or interception control works have been introduced to reduce the input of saline wastes. The situation in the River Murray depends on the location and seasonal conditions at the time of recording as shown in the graph of salinity levels along the River Murray, Figure 15. The concentration of salt increases with the distance downstream. Major increases in salinity occur between the Loddon River confluence and Swan Hill, between

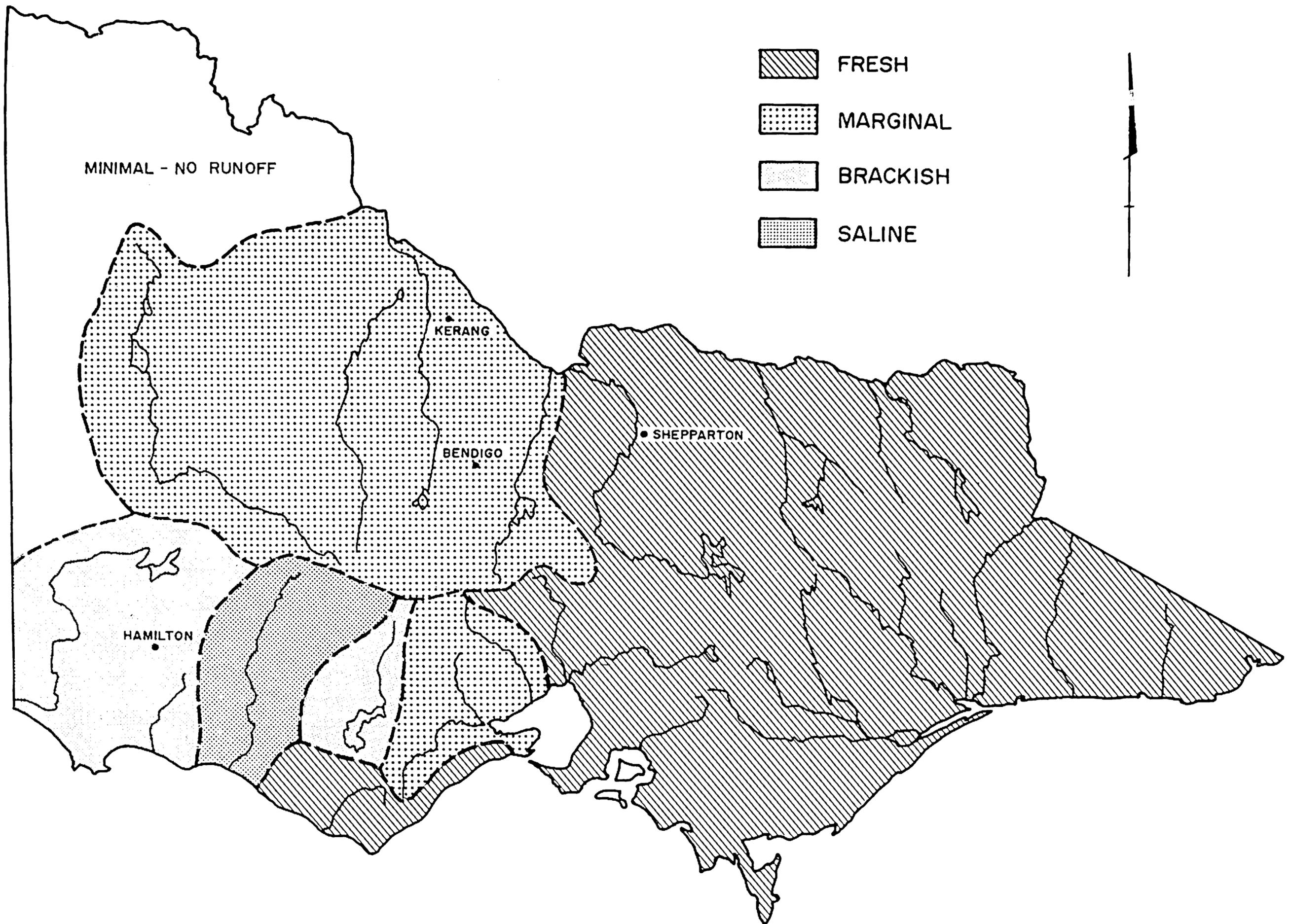
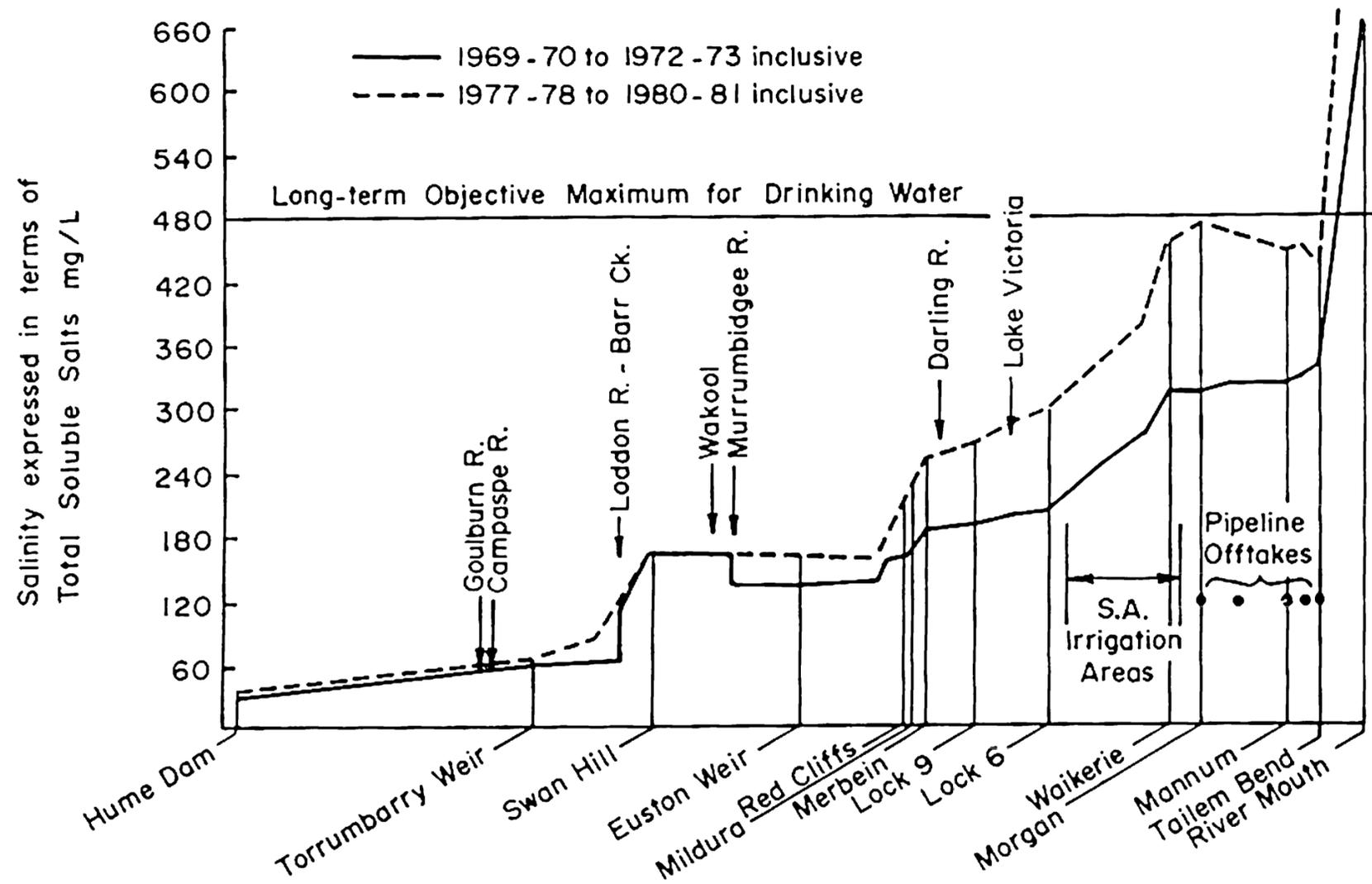


Figure 14. Average Stream Salinities on a Catchment Basis



Source: Adapted from Peck, Thomas, Williamson 1983  
 "Water 2000: Consultants Report N° 8"  
 Dept. Resources & Energy

Figure 15. Average Salinity Profiles along the River Murray for Two 4-year Periods of Similar Rainfall and River Flow.

Red Cliffs and Merbein and in the Riverland Irrigation Area below Lock 6 in South Australia.

### 3.4 LAKES AND WETLANDS

Man has altered these areas by draining lowlands for agriculture, closing off some areas for irrigation storages and others for evaporation basins. In the Kerang Region, shown in Figure 16, Lakes William, Kelly, Little and Tutchewop are now used for evaporative basins with consequent effects of increasing salinity and the death of native vegetation. Little Lake Boort, Lake Charm and Lake Boga are used to store irrigation supply. Local landholders expressed their concern to the Committee at the increases in salinity of these waterbodies. Under natural conditions, the lakes would be flushed by floodwater so that each cycle of floodwater would maintain the total salt content relatively constant. However, reduced flushing because of flood control or irrigation water management has caused an increase in the salinity of lakes. For example, the salinity of Lake Charm at present is about 2100 mg/L but has been rising at a rate of 50 mg/L per year since 1965 and is affecting not only private diverters for irrigation and domestic purposes but also recreational and environmental interests.

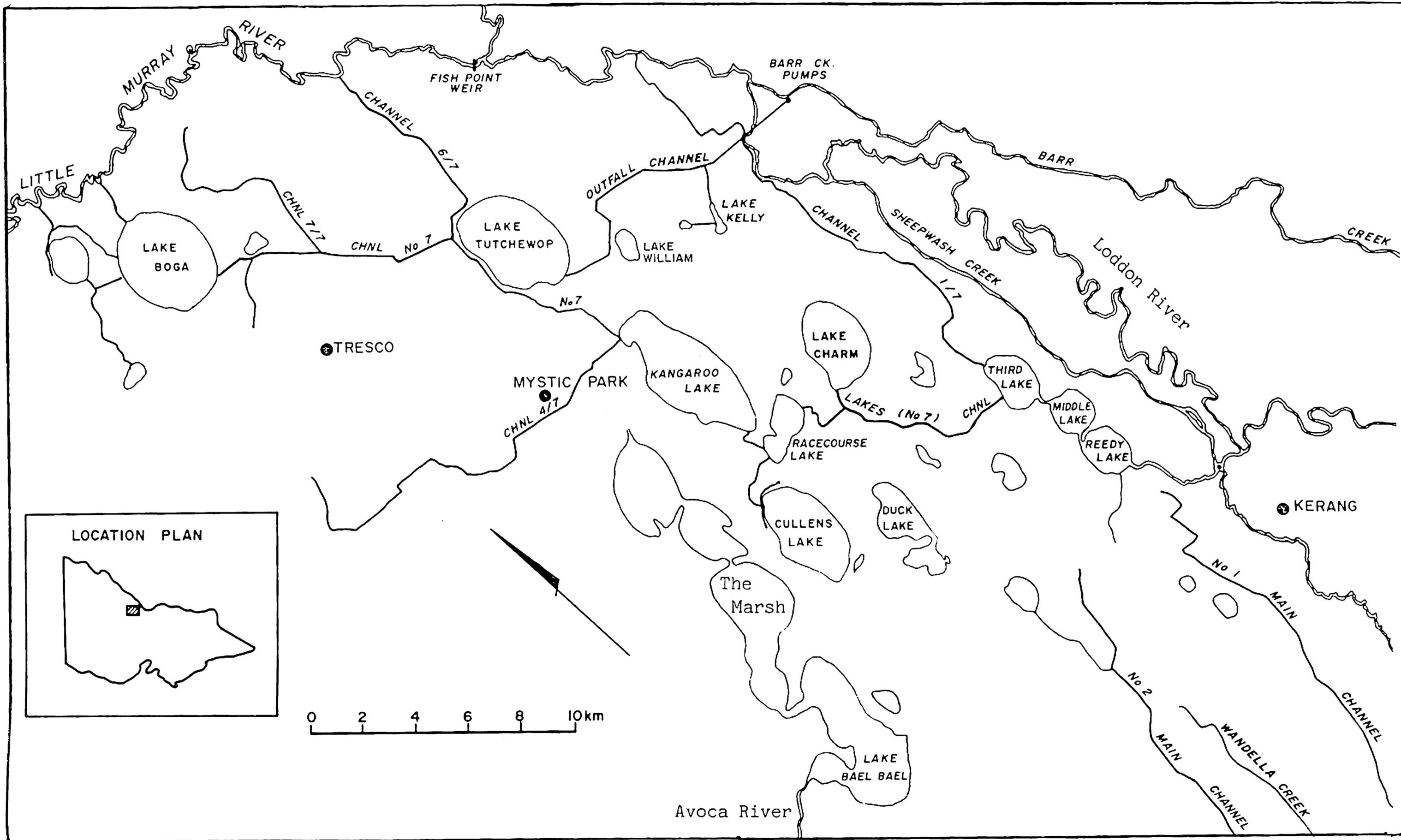
In the area are Cullens Lake and the wetlands of the Avoca marshes which have been entered in the Register of the National Estate of the Australian Heritage Commission and which are threatened by salinity.

Similarly in the Colac region, the increase in saline seeps and swamps because of rising groundwater levels has helped increase the salinity concentrations within the closed lakes.

### 3.5 RESERVOIRS AND FARM DAMS

#### 3.5.1 Reservoirs

Only limited information on the salinity of reservoirs has been provided to the Committee.



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Figure 16. Kerang Lakes Area

Reservoirs have generally been built on freshwater streams. For example, stream salinities of the River Murray at Lake Hume and the Goulburn at Fildon are of excellent quality. In the Eppalock Catchment, salinities appear to have remained stable since 1959. Similarly, salinity levels in the Malmsbury Reservoir have remained stable since 1944.

In the Rocklands Reservoir, which is the only major storage for surface water in the Dundas region, the majority of inflow is good quality water from the Grampians but a significant input of saline water is yielded from cleared catchments on the Dundas Tableland adjacent to the reservoir. In periods of low inflow the water salinity in the reservoir increases and has reached a level of 900 mg/L (1500 EC units).

### 3.5.2 Farm Dams

Soil Conservation Authority officers provided information on damage to farm dams as a result of the destabilisation of earthen banks by saline water. This has occurred in the Charlton and Donald areas where dams have been filled from the Grampians water supply or the Avoca River. The efficient provision of local on-farm water supplies is also compromised where salt-affected drainage lines are widespread. Instances of salinity levels exceeding 18000 mg/L have been recorded where dams were incorrectly sited in the Dundas region.

In other areas, the salinity of water in farm dams has increased because of seepage from saline groundwater. The Soil Conservation Authority has documented severe cases at Kamarooka and Colbinabbin. (At Kamarooka, an alternative reticulated water supply had to be developed at the landholders expense.)

## 3.6 DRYLAND SOIL SALINITY

### 3.6.1 Saline Scalds

The presence of salt scalds in Victoria is restricted to the Wimmera and Mallee regions in the north west of the State as shown in Figure 17. The Soil Conservation Authority has estimated that 60,000 ha of land is affected.

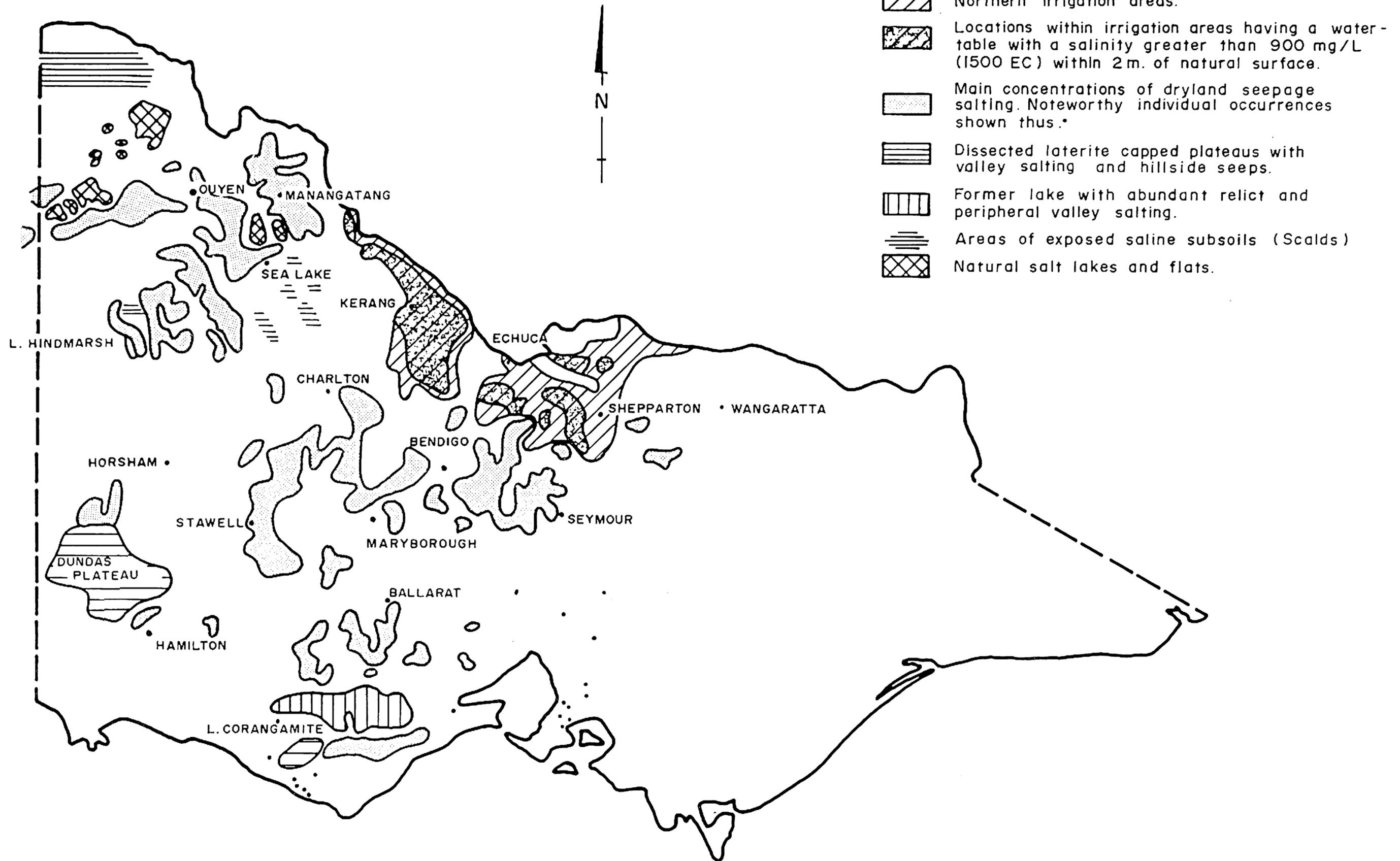
### 3.6.2 Seepage Salting

The location of land that is currently subject to seepage salting is shown in Figure 17. Unlike scalding and natural salting, seepage salting often occurs on highly productive grazing and cropping soils. The present estimate by the Soil Conservation Authority is that 40,000 ha of dry farming land in Victoria is visibly seepage affected. A further 40,000 ha is affected by incipient salting or considered seriously at risk from seepage salting.

The extent of seepage salting varies from minor local problems of a few hectares to localities such as at Kamarooka near Bendigo where about 1000 hectares are affected and another 10,000 hectares are at risk. Similarly, a survey conducted by the Soil Conservation Authority revealed that 9% of the Colbinabbin Ranges is affected. In replies to the municipal survey, salinity of dry farmland was viewed as the most widespread problem especially in the north and north west of the State.

The distribution of observable seepage salting is as follows (see also Table 5.1):

- \* 30% occurs on cropping land in the north-west of the State,
- \* 55% on grazing land in the highlands, western plain, Dundas Plateau and adjacent areas of the south west,
- \* 15% is on cropping and grazing land in catchments of the northern slopes of the Dividing Range in central and eastern Victoria.



## 3.7 IRRIGATED SOILS SALINITY

### 3.7.1 Kerang Region

Seventy-two percent of the Kerang region, or 230,000 hectares is underlain by a watertable within two metres of the surface. This is shown in Figure 18. More than 83,000 hectares, or half the total irrigated area of 166,000 hectares, is suffering reduced or negligible agricultural production because of high watertables. The Department of Minerals and Energy has estimated that 80% of the shallow groundwater has a salinity greater than 20,000 mg/L.

### 3.7.2 Shepparton Region

Rising watertables and damage from salinity are only recent phenomena in the Shepparton region. In 1970, a report on Salinity Investigations in the Murray Valley stated that "watertable rise is not very rapid (and) salinity is not yet a major problem" in the region (Gutteridge, Haskins and Davey, 1970). Since then 150,000 hectares have developed a watertable at or less than two metres below natural surface. Of the 217,000 hectares of irrigated land in the Shepparton region, over 50% has watertables at or near two metres below natural surface as illustrated in Figure 19. Waterlogging and salinity damage is apparent over at least 50,000 hectares. The extent of severely affected areas where there is no production is limited to about 4000 hectares. The storage of salt in the soil is not as great as in the Kerang region.

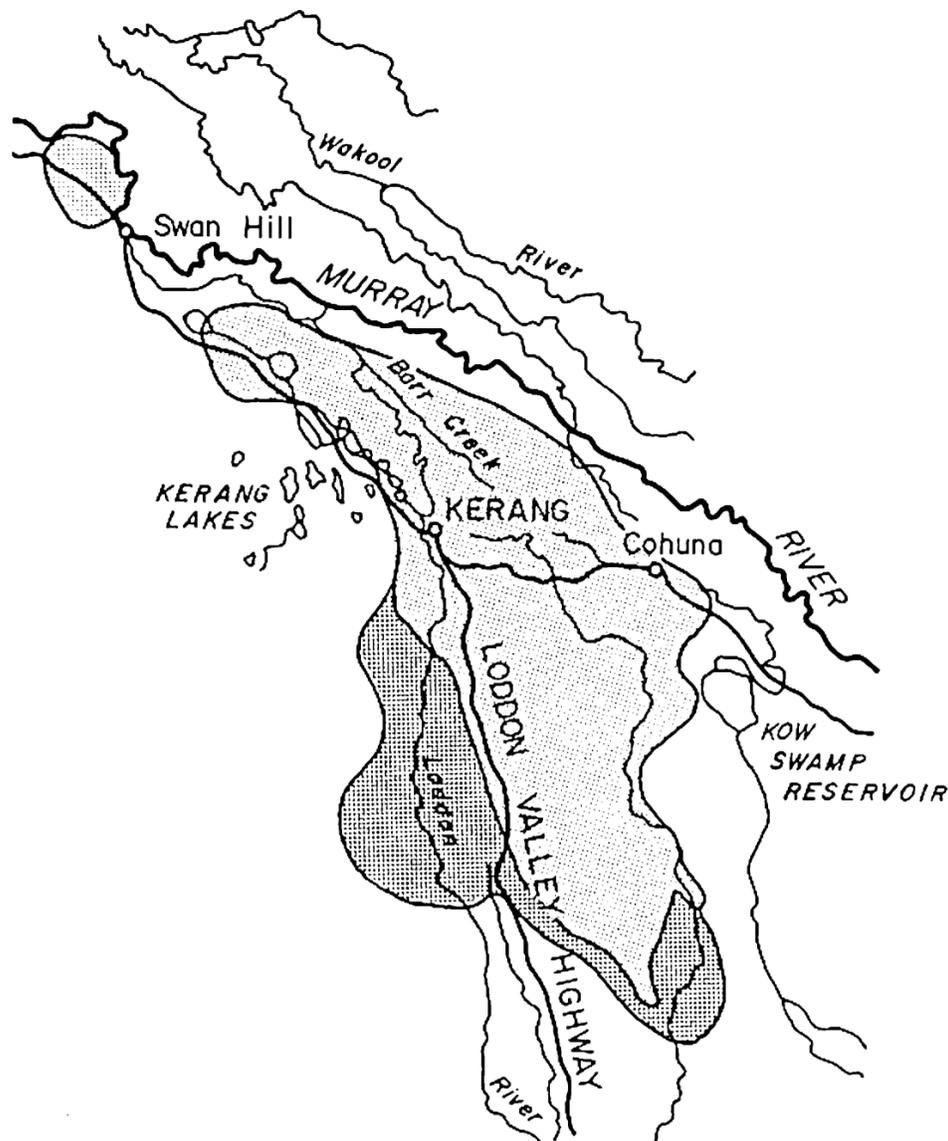
The Shepparton Phase A groundwater pumping scheme, which is controlled by the Water Commission, protects approximately 3,600 hectares of orchards and about 11,000 hectares of adjacent crop or pasture land.

### 3.7.3 Other Regions

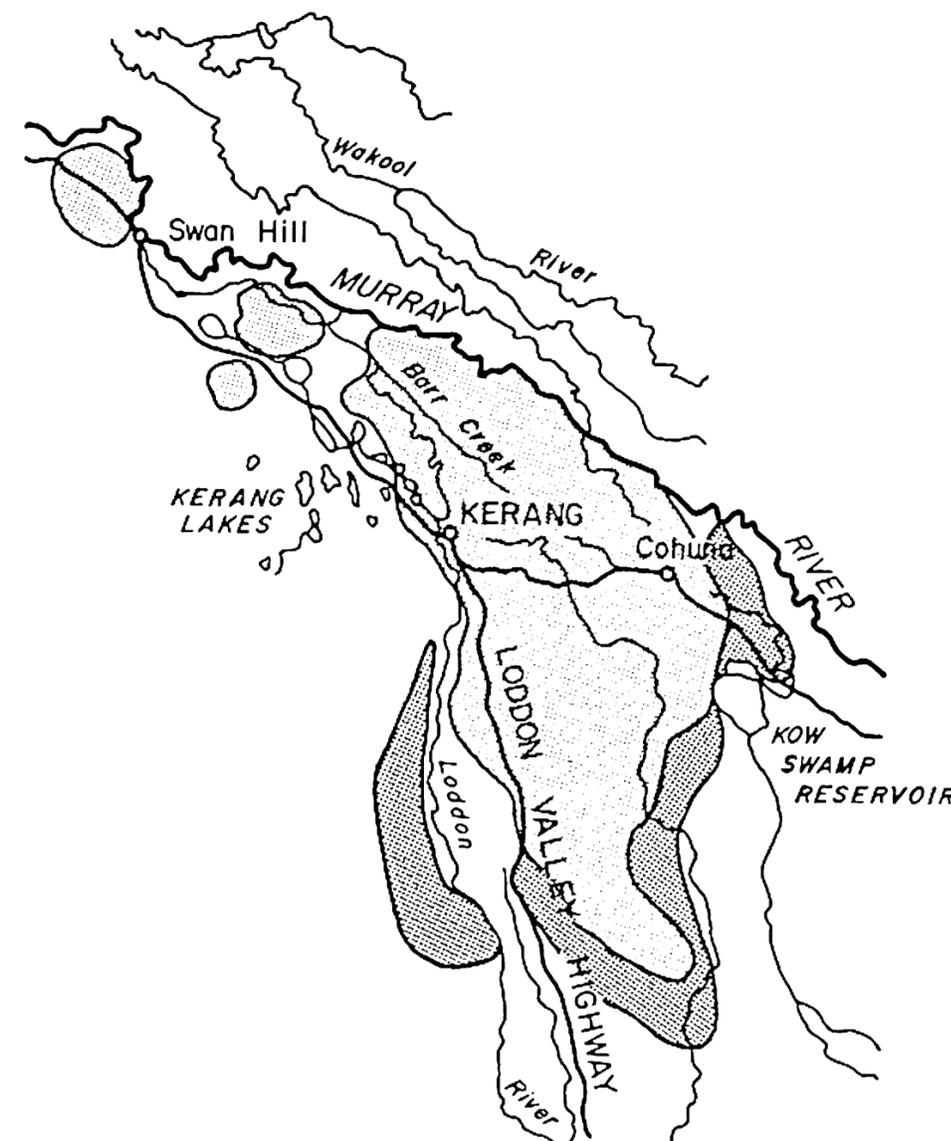
Much of the Sunraysia region is now protected from high watertables so seepage salting is not a major problem.



1974



1977



1982  
(February)



WATERTABLES WITHIN 2m OF SURFACE



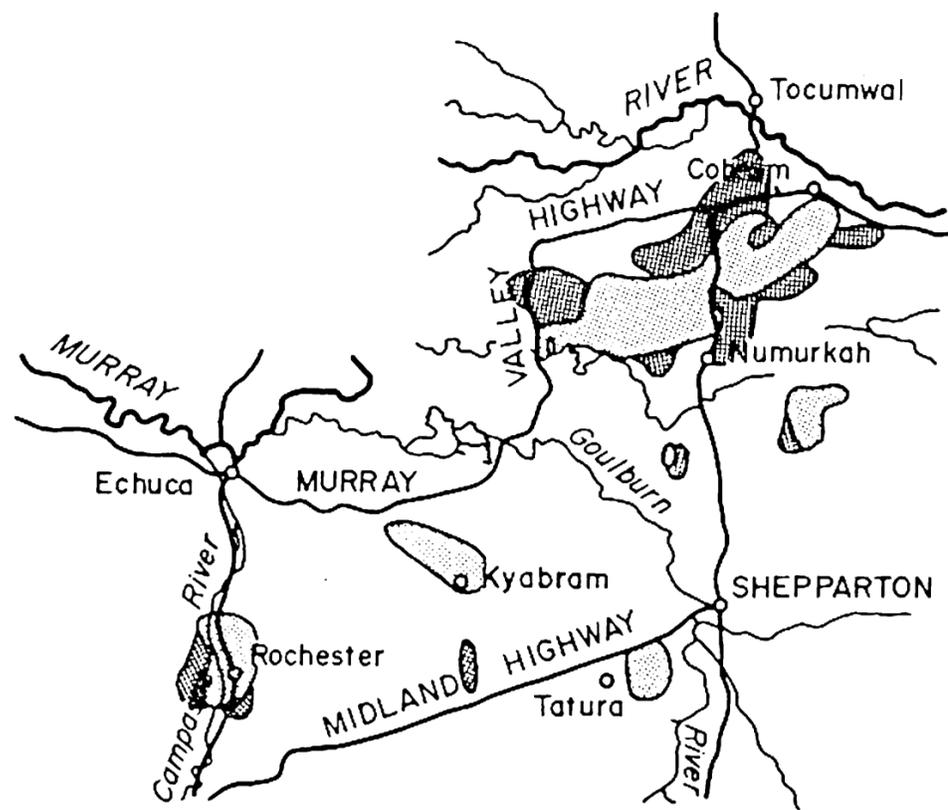
1977 - WATERTABLES WITHIN 2-4m OF SURFACE

1982 - WATERTABLES WITHIN 2-3m OF SURFACE

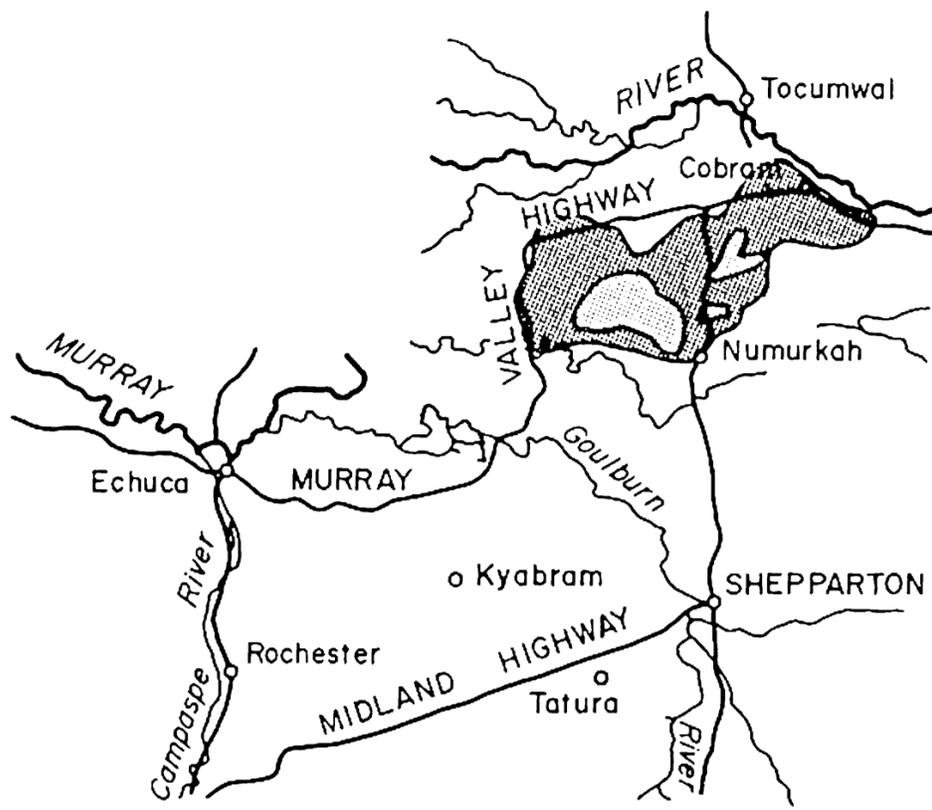
SOURCE : 1974 , 1977 FROM MAUNSELL & PARTNERS , 1979

1982 ADAPTED FROM RURAL WATER COMMISSION INFORMATION

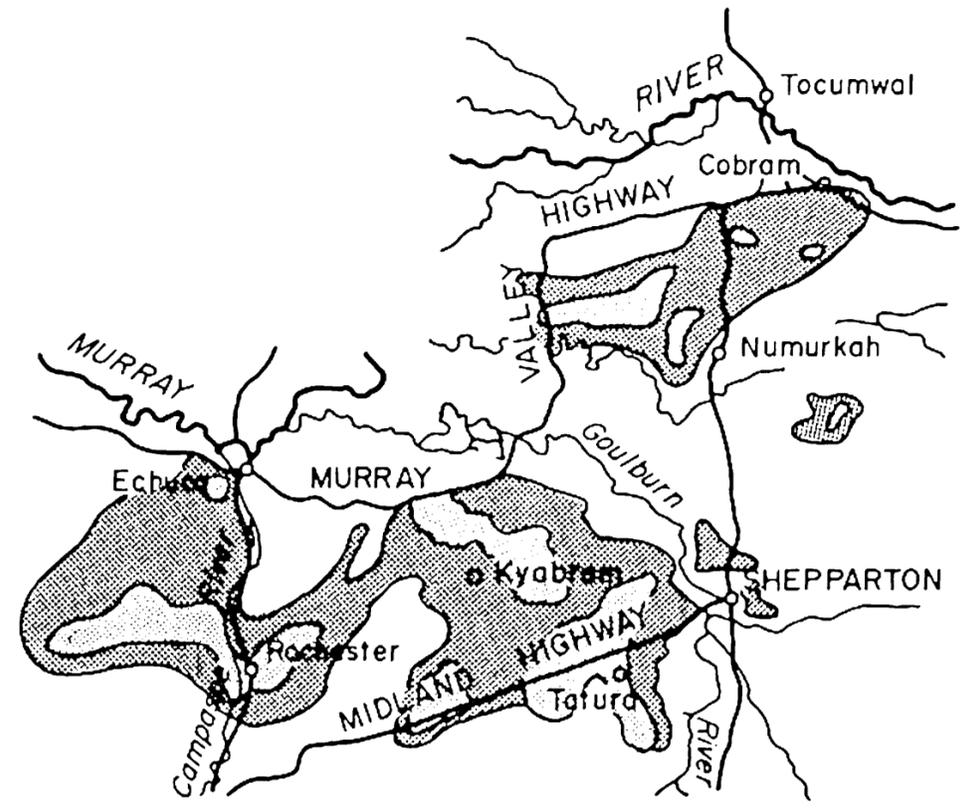
Figure 18. Watertable Levels in the Kerang Region



1974



1978



1982

-  WATERTABLES WITHIN 2m OF SURFACE
-  1974 , 1978 - WATERTABLES WITHIN 2-4m OF SURFACE  
1982 - WATERTABLES WITHIN 2-3m OF SURFACE

SOURCE : 1974 , 1978 FROM MAUNSELL & PARTNERS , 1979  
1982 ADAPTED FROM RURAL WATER COMMISSION INFORMATION

Figure 19. Watertable Levels in the Shepparton Region

In the Werribee Irrigation District, soil salinity because of channel seepage was a problem in the 1950's but when channel lining was completed problems diminished. In this area groundwater pumping for irrigation supplies is providing some groundwater control.

### 3.8 CONCLUSIONS

- (i) Groundwater salinities vary greatly throughout the State, but generally increase from the east to the west. While localised increases may be attributed to practices such as waste disposal or irrigation, the overall extent of groundwater salinity that is due to man's activities is not known.
- (ii) Streams in the east of the State are generally fresh, but those in the west contain higher concentrations of salt. There is inadequate information with which to determine the effects of human activities on those levels. In the River Murray, salinity levels rise progressively downstream with major increases at the confluence with the Loddon River and in the Red Cliffs - Merbein Reach.
- (iii) Dryland salinity is observable over a combined area of 100,000 hectares in Victoria. Saline scalds affect 60,000 hectares of land in the Mallee. Saline seeps observably affect about 40,000 hectares. A further area of about 40,000 hectares suffers some decline in productivity from seepage salting or is now at some risk from rising watertables. Of the observable seepage salting about 30% occurs on cropping land in the north west of the State, 55% on grazing land in the Highlands, Western Plain and the Dundas Plateau and adjacent areas of the south west, and 15% on cropping and grazing land in catchments on the northern slopes of the Dividing Range in central and eastern Victoria.
- (iv) In the irrigation regions of Kerang and Shepparton about 140,000 hectares suffer damage from salt. Almost 400,000 hectares of land are salt prone, having saline watertables within 1.8 metres of the surface. This represents about 70% of the total Kerang Region and 20% of the total Shepparton Region. A drainage system now protects

the Sunraysia Region from high watertables. The Committee is not aware of salinity problems arising from high watertables in the smaller irrigation schemes in Victoria.

## CHAPTER FOUR

### TRENDS

#### 4.1 INTRODUCTION

While the previous chapter examined the present extent of salinity problems in Victoria, rates of change must be examined to assist in determining priorities for salinity control. In the short term, changes can be forecast reliably from recent experience, but long term predictions are much less certain.

#### 4.2 GROUNDWATER

Data on long term trends in the salinity of groundwater are not available. However, of those municipalities with groundwater salinity problems, half considered the quality was deteriorating. Groundwater quality deterioration was also noted by many farmers who gave evidence.

An important fact is that salinity levels will generally lag a period of time behind responses in aquifer pressures. Whereas pressure differences may be recorded soon after increased accessions to groundwater, salt must physically move. Accordingly, a response in aquifer pressures further down the catchment may not be followed by an associated increase in salinity until many decades later.

#### 4.3 STREAM SALINITY

Stream salinities are expected to continue to increase in the immediate future as a result of past and present agricultural development.

Rising groundwater tables and associated increases in dryland salinity will mean that further small watercourses will become saline. In the south-west of Victoria, small streams and springs may become too saline for safe use by stock especially during the dry season. In northern Victoria, increases in small stream salinities would increase with a major deterioration in water resources in the long term.

It has been shown that there is a nett loss of salt from some cleared catchments in Victoria (Williamson, 1983). On this basis stream salinities may eventually fall, but the time scale is unknown. A period of many hundreds of years may be necessary before a significant reduction in stream salinities occurs.

## **River Murray**

At Morgan, stream salinities appear to have increased significantly since 1954. (Maunsell & Partners, 1979). However, a longer period of record at Mannum since 1945 and the period of record at Morgan between 1963-81, suggests a less dramatic increase (River Murray Commission, 1981). Officers of the South Australian Government indicated to the Committee that the salinity of River Murray water entering that State is increasing by about 4 mg/L (6 EC units) per year. A recent statistical analysis of chloride concentrations over a 42 year period at Morgan indicated that a positive trend has occurred over and above that associated with a decline in water flow. (Cunningham & Morton 1983).

In the future, planned interception schemes along the River Murray, should reduce the salinity at Morgan from the average salinity of 330 mg/L (530 EC units) to about 270 mg/L (430 EC units) provided the current salt loads remain stable (ACIL Australia, 1983). Dwyer Leslie (1984) concluded that, without further intervention, increases in the salinity of the tributaries could cause the salinity of the River Murray to rise further at Morgan.

## **4.4 SOIL SALINITY**

### **4.4.1 Dryland Areas**

The area of land that is affected by seepage salting is increasing. This was supported by the Soil Conservation Authority as well as the many farmers who gave evidence to Committee. It was also confirmed by the municipal survey, in which almost half the responding municipalities with a dryland salinity problem considered the situation to be getting worse.

The greatest expansion of seepage salting occurs following very wet years. In dry years, although minor reversion may occur, the situation is rarely returned to its original status.

The Soil Conservation Authority provided the following assessment of the five broad regions.

\*Mallee/Wimmera plains: The broad, flat areas between sand ridges in both the north-eastern and southern Mallee, for example, around Manangatang, have the greatest potential for the spread of salting in north-western Victoria. The area which could become affected by lost or reduced productivity is up to 100,000 ha. This is ten times the present extent of seepage salting in this region. (The Committee also received evidence that all land below 50m A.H.D. in the Mallee could be at risk from salinity from the regional watertable.) Further deterioration of associated water supplies is inevitable.

Extensions of dune and channel seeps are not likely to be large in aggregate but are probably important in recharging the regional aquifer. Some extensions on alluvial flats are expected in both the Mallee and Wimmera.

\*Upland front and riverine plains: The potential for spread of soil salting is considerable. At Kamarooka, just one of ten similar areas including Marnoo and Burke's Flat, 1000 ha are affected and at least 10,000 ha are endangered. Groundwater and farm dam supplies will continue to deteriorate.

\*Volcanic plains of southern Victoria: Salting is expected to extend and, possibly, new areas to develop where older soils or lake flats occur. Further deterioration of water supplies can be expected.

\*Lateritic tablelands (Dundas, Barwon Downs): The area of soil salting likely is approaching its limit. However, stream and groundwater qualities are often poor and will remain so in the foreseeable future.

\*Central Victorian uplands: Again, the area which could be affected is approaching its limit. Although long-term trends in water quality cannot be predicted with any certainty on the present data, there is no doubt that the present saline base flows will continue indefinitely.

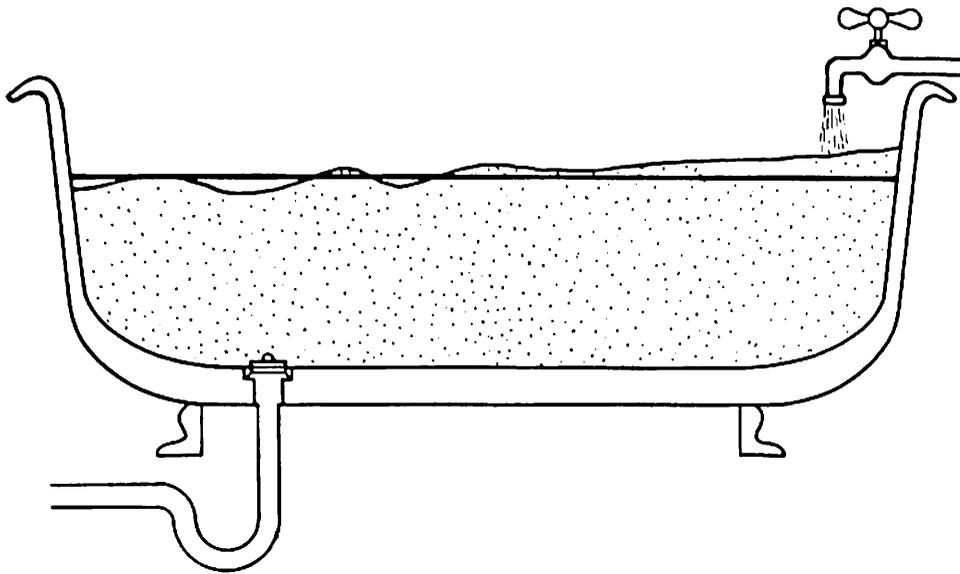
The Soil Conservation Authority expects that the area of dry farming land affected by seepage salting will nearly double its present area to 160,000 ha, by the year 2000, if no further control measures are implemented. By then, at least 2% of the broad agricultural zone will have been disabled, including an appreciably higher proportion of better class land in affected districts.

The Soil Conservation Authority also expects the problem of seepage salting to increase beyond the year 2000 if present land management strategies continue. The Committee has not received information as to when future groundwater equilibrium levels might be reached, and what the extent of affected land might then be. Therefore, future action cannot be based on the expectation that this equilibrium will be reached in the foreseeable future. The area of salt scalds, which are not linked to rises in watertables, now appears to be static.

#### 4.4.2 Irrigation Areas

In the Kerang region, soil salting and high watertables have been a problem in some areas for 50 years. Severe soil salinisation in the Tragowel Plains was reported less than 20 years after irrigation began.

Within the Kerang region, the water inputs and outputs appear to balance, such that within the irrigation area the watertable heights have reached a dynamic equilibrium at one metre below natural surface. However, the Department of Minerals and Energy in its evidence to the Committee suggested that, should this balance be upset by very wet years, the area underlain by watertables could increase into the peripheral dryland areas.



". . . consider the whole of northern Victoria as being essentially a bath tub full of sand. As a consequence of the European occupation, we turned on a tap which has gradually filled that bath tub. The surface of the sand is slightly undulating and water is now beginning to appear as an outcrop at the lower point of the depression. If we were able to revert to a pre-European situation, the best we could achieve would be to turn off the tap. We certainly would not start draining the bath tub. The only way to do that is to pull out the plug, . . ."

Dr P. Macumber, Department of Minerals and Energy.

Evidence to Committee 20 June 1984.

The rapid rise of watertable levels in the Shepparton region is a major concern. The Department of Minerals and Energy indicated that as the downward drainage is reduced by rising pressures in the Goulburn and Campaspe Deep Leads, the areas around Rochester and Shepparton will become discharge zones for the deep leads leading to increased watertable heights and areas affected. Studies by Macumber (1978) and Tickell (1983) of the Department of Minerals and Energy have suggested that these deep lead pressure levels around Rochester have risen about 3m in the last 8 years to be within 4m of natural surface compared to the average rate of 0.25m per year for the last 75 years (Dwyer Leslie, 1984).

Without the ability for water to continue to move downwards and carry salt away from the root zone, a new equilibrium condition will be developed for the water balance. This will require the development of a shallow watertable for discharge over most of the area.

#### 4.5 CONCLUSIONS

- (i) Information provided to the Committee from many people indicates that the salinity problem in Victoria is increasing. This is associated with a long term trend in the rise in watertables in the western half of Victoria and some North Eastern areas as documented by Government authorities and observed by many landholders who presented evidence to the Committee. On the other hand, the area of salt scalds, which are not linked to rises in watertables, now appears to be static.
- (ii) Seepage salting in dryland areas appears to be increasing in areas at about 2% each year. The rate of increase is greatest in wet years. The Soil Conservation Authority expects the salt affected areas to double on average by the year 2000 if present trends continue. In the Mallee, a tenfold increase in the affected area could occur.
- (iii) In the northern irrigation areas, the past rate of rise in water tables has been about 0.35 metres per year. In the Kerang Region the input

of water to the watertables now appears to be balanced by evaporation and drainage losses, but the danger remains that in very wet years this balance could be upset and peripheral dryland areas could be affected.

In the Shepparton Region, the pressure levels in the Deep Lead aquifers are rising thereby reducing the capacity of water in the shallower aquifers to drain away. Without further control measures, a major expansion of salt-affected land is expected within the next decade.

(iv) The Committee has not received comprehensive data on salinity trends in water bodies. Specific cases which have been brought to its attention include:

- increasing concentrations of salt in lakes near Kerang,
- rises in the salt concentration of Rocklands Reservoir which contributes to the Wimmera Mallee Stock and Domestic Supply System.

For the River Murray, trends in the salinity of water are difficult to assess due to the variable nature of the flow and salt loads. However the concentration of salt in the water entering South Australia may have increased in recent years at the rate of about 4 mg/l. per year.

CHAPTER FIVE  
ECONOMIC EFFECTS

5.1 INTRODUCTION

In this chapter, the economic consequences of induced salinity are reviewed. They result from the effects of salinity either on parts of the natural environment that are utilised for economic gain or on parts of the built environment of economic value. Of particular importance are the effects of salinity on agricultural production, domestic and industrial equipment and roads. In the next chapter the environmental and social effects which cannot be measured in financial terms are discussed.

Economic costs can be divided into damage costs and abatement costs. Damage costs include:

- (i) the opportunity cost of production foregone incurred by farmers whose land becomes salinised, and
- (ii) the costs associated with the use of saline water.

Abatement costs include:

- (i) the costs of measures to control the development of salinity problems (preventative measures)
- (ii) costs of alleviating salinity impacts on land resources (reclamation).

Damage caused by salinity is outlined in this chapter. The costs of abatement measures are summarised in section 5.11 but descriptions of the measures and their current adoption are given in Chapter Seven.

Economic effects are considered at three levels. These are the impact on the individual enterprise, the effect on a region, and the

effect on the national economy. Individual enterprises suffer from both loss of production and reduced land value. The effect at the regional level should take into account not only the collective direct impacts on the individual enterprises, but also the consequences of those impacts for other parts of the region with which the enterprises are economically linked. In addition, council rating can be affected by changes in land value. The assessment of the impact on the national economy does not take into account such indirect effects.

In addition to the present economic impact of salinity, the Committee has also assessed the possible future consequences, arbitrarily chosen as 30 years hence, if further control measures are not implemented.

## 5.2 SOIL SALINITY - DRYLAND AGRICULTURE, VICTORIA

### 5.2.1 **Methods of Assessment**

With observable dryland salting problems, the loss has been determined to be the net income foregone. This is the value of the potential production of an enterprise in a non-saline situation, less the associated expenditure. The Soil Conservation Authority has used this technique to calculate the loss from severe salinisation in the regions. Incipient soil salting is more difficult to appraise. In dryland areas, when salinity causes a production loss, expenditure may also be reduced but not at the same rate. The loss from salinity is then the difference in the value of production less expenditure foregone. Values of loss are expressed in 1984 dollars.

### 5.2.2 **Salt Scalds**

#### Farm Level Costs

Land affected by salt scalds has a reduced agricultural output because of reduced suitability for cropping and grazing. However, typically, salt scalds occur in regions of naturally low agricultural productivity. The Soil Conservation Authority

has estimated the average nett loss in income for land affected by salt scalds in Victoria to be \$1.67 per hectare and the average decline in the land value to be \$3.33 per hectare.

#### Present Aggregate Costs

Although the total area of affected land in Victoria is 60,000 hectares, the naturally low productivity means that the total damage costs are low, amounting to about \$0.1 million per year.

#### Future Damage Costs

Future losses from salt scalds in Victoria are not expected by the Soil Conservation Authority to increase above the present loss of \$0.1 million per annum, provided land management practices that reduce erosion are maintained.

### 5.2.3 Saline Seepage

#### Farm Level Costs

Saline seepage reduces the productivity of affected farmland to different levels. Areas of incipient salting suffer some decreased production but the relationship between depth to watertable and crop production is not well defined. Where land is at risk, cropping is not normally practised, and grazing enterprises at reduced stocking rates occur.

Because of the diverse nature of seepage salting, which can range from many small scattered sites to over 10% of an individual farm, the effect on an individual farm's income is variable. The loss depends upon the size of area affected, the average income per hectare foregone and seasonal conditions. With saline seepage, it is typical that more productive areas of farms are affected. This average annual loss per hectare varies between regions, as is shown in Table 5.1. In assessing

these costs no allowance has been made for the consequent erosion losses. In other areas, where cropping has been foregone, the losses may be more substantial. Losses of \$100/ha/year were quoted for areas that were previously cropped one year in three. Where seepage areas are partly rehabilitated and growing salt tolerant plants, such as tall wheat grass, some productivity can be retained. For example, the Soil Conservation Authority has estimated that in Central Victoria, the productivity on treated land is about 20-25% of productivity on unsalinised grazing land.

Table 5.1  
Costs of Observable Saline Seepage  
(1984 Dollars)

Region	Area Affected (ha)		Nett Average Annual Loss in Farm Income Per ha Affected (\$)	Nett Total Annual Loss in Farm Income (\$Million) (range)
	Cropping	Grazing		
Mallee	9,000		48.8	.3 - .55
Donald	2,000		137.5	.25 - .33
Other Northern Catchments	4,400		87.5	0.3 - 0.4
Dundas Area		13,000	21.2	0.2 - 0.3
Highlands		5,000	22.0	0.11
Otways, Western Plain		3,700	89.2	0.33
North East	1,700		71.2	0.12
All Victoria	39,000			1.6 - 2.2

Source: Soil Conservation Authority Submission, 1983.

The associated loss in the market value of land is also affecting individuals.

### Present Aggregate Costs

The direct costs of dryland salinity on a regional basis are shown in Table 5.1. In addition, salinity problems reduce land values, which in turn cause reduced rate revenues for local government. An estimate of the money involved was presented by the Shire of Swan Hill. In that Shire, some 1,429 ha of land has become unrateable. Future revaluations within municipalities will ultimately have an effect on revenue. The loss in the market value of land in Victoria is estimated to be about \$17 million representing a reduction of about 70% from the corresponding value of unaffected land.

At the State level, a conservative estimate of annual loss in nett farm income due to visible saline seepage in Victoria is in the range of \$1.6 to \$2.2 million depending upon seasonal influences and market price fluctuations.

In addition to the losses from visible seepage problems, the Soil Conservation Authority has estimated that incipient salting is conservatively costing Victoria an annual loss in nett farm income of about \$1.3 million.

Therefore, the present estimate for losses in nett farm incomes due to dryland seepage salting (both observable and incipient) is in the range \$2.9 to \$3.7 million per annum depending upon season and prices.

### Future Damage Costs

Future income losses to dryland agriculture from saline seepage could reach between \$6.6 to \$8.8 million/annum in the year 2010, if the current expansion rate of 2% per annum continues. This value of loss assumes that both observable

and incipient salting increase at 2% per annum. Alternatively, if the present incipient problems only deteriorate to become observable problems, the cost would be about \$5 million per annum.

## 5.3 SOIL SALINITY - IRRIGATED AGRICULTURE, VICTORIA

### 5.3.1 **Methods of Assessment**

The effects in irrigation areas of soil salinity and high watertables are inter-related and often indistinguishable. Productivity of crops and pastures may be reduced by direct toxic effects of the components of the salts, damage to soil structure, and interference with the uptake of water into plant roots. While the consequences of waterlogging are clearly observed, the relationship between level of watertables, soil salinity and agricultural productivity in areas of incipient problems is not yet well quantified.

Past losses to horticulture, pasture-based production and crops are documented by ACIL Australia (1983). For example, horticulture was virtually eliminated from the Mead Area, near Cohuna during the 1920's and 1930's and also suffered rapid decline in the Rochester Irrigation Area at about the same time. Waterlogging resulted in the loss of about 30% of the plantings of peach trees in the Shepparton Region in 1973, a year of above average rainfall. Peach trees are very susceptible to waterlogging.

In irrigation areas, because of the wide variety of enterprises and the added complication that irrigation water has on salinity expression, most estimates have been based on regional production losses. Estimates of Cary, Ferguson and Belin (1982) used production losses comparing losses from visible salting to that of land with no visible salting, although watertables were within 2m of the surface. Dwyer Leslie (1984) in re-appraising the situation compared the present production to the potential had there been no salinisation or waterlogging.

### 5.3.2 Farm Level Costs

The proportion of an irrigated property which is affected by salinity and high watertables varies within the irrigation regions.

A survey of farmers in the Shepparton Region in 1980 indicated that the average proportion of a farm affected by salinity was 30% for horticultural holdings and about 8% on mixed and dairy farms. In the Girgarre area, where the average farm size is about 40-100 hectares, affected areas can be up to 25% of individual farms. In the Kerang Region, the gross income of salt-affected properties can be less than half that of comparable unaffected holdings.

Operating costs tend to be higher because of crop and pasture failures due to salinity. The combined effect of reduced gross income and higher operating costs result in significantly reduced farm profits.

In addition, the flexibility of farmers to change enterprises and crops in order to take advantage of market fluctuations is restricted.

Estimates for present capital value of irrigation land lost because of salinisation have been as high as \$110 million.

### 5.3.3 Present Aggregate Costs

The estimated direct costs of salinity and high watertable in the Shepparton and Kerang regions are shown in Table 5.2. Soil salinity is generally not a major problem in the Sunraysia region because of tile drainage. However, in the Nangiloc-Colignan area the lack of disposal for saline effluent is costing \$0.35 million per annum (Maunsell and Partners 1979).

**Table 5.2**  
Current Costs of Salinity and High Watertables  
in Irrigation Areas

Region	% decrease in Production	Nett Farm Loss \$ Million (1984)
Shepparton		
- irrigated agriculture	7	11
- non irrigated cropping	Nil	Nil
Kerang		
- irrigated agriculture	22-27	18-20
- non irrigated cropping	100	2.5

Source: Dwyer Leslie (1984)

The effects of soil salinisation on regional development within irrigation districts is not well documented. However, the Dairy Processing Industry in a submission to the Committee outlined some consequences in the Goulburn-Murray Irrigation District.

The population of the region is about 100,000 of which about 65% are located in urban areas. Because there are few industries using raw materials supplied from outside the region, most of the urban population is dependent upon income derived either directly from agriculture or from the agricultural support industries (processing, supply companies, service business). Assuming that the current loss in dairying areas is 10% of the farm gate value, this loss is about \$12-15 million per annum to the industry in raw resources at 1983 value. The milk processing industry in the Goulburn Murray Irrigation District represents a capital investment of more than \$70m., directly employs more than 1500 people and pays out more than \$20 million per year in wages. Not only would there be direct losses, but service

industries would also be reduced. The milk processing industry in Victoria has an income multiplier of 3.95 and an employment multiplier of 2.04. These values mean that for each dollar lost in the milk processing industry almost \$4 is lost to the regional community. This would indicate that the flow onto the community at present is between \$45 million and \$60 million. Similarly, if current employment levels cannot be sustained due to a reduction in milk supplies, then 2-3 jobs will be lost elsewhere in the rural community for each job lost in the milk industry.

#### 5.3.4 Future Damage Costs:

The Water Commission predicts that, without further counter measures, the production losses in the Shepparton region may be about 24% of the whole region. The associated future net losses of farm income for the irrigated land would be of the order \$45 million per annum with major implications for the salinity in the River Murray. In addition, part of the land currently supporting dryland cereal cropping would be lost. The net value of this loss would be of the order \$10 million per annum (Dwyer Leslie, 1984).

Within the Kerang region, watertable levels are believed to have reached equilibrium heights over most of the region and future losses may not be expected. However, if the ultimate levels of soil salinisation in the Kerang region are similar to that in the Shepparton region, further deterioration is likely, especially in the less intensively irrigated southern areas of the region. Total production losses would then be in the order of 36%. This would cause a net production loss of about \$30 million per annum.

Future losses to the milk industry would be substantial with severe implications on smaller towns. This was shown when small towns such as Girgarre, Nathalia and Numurkah had difficulties adjusting when processing plants in those towns closed.

In the Sunraysia district, especially the Nangiloc-Colignan area, if no further works are constructed then the loss will remain at about \$0.35 million per annum.

## 5.4 WATER SALINITY - DRYLAND AGRICULTURE, VICTORIA

High water salinities can reduce the productivity of dryland farms through the impact on stock water supplies and the water retention ability of farm dams. Providing alternate stock water can involve substantial expense to individuals and may not always be feasible. Sufficient information was not available to enable the Committee to quantify the associated economic effects.

## 5.5 WATER SALINITY - IRRIGATED AGRICULTURE, VICTORIA

### 5.5.1 Farm Level Costs

The salinity of applied irrigation water is generally not a problem at present in most of Victoria. Whilst use is made by pasture irrigators of saline groundwater and drainage water, such water is normally mixed with fresh channel water. The resultant "shandy" is suitable for irrigation purposes and has a minimal quantifiable effect on farm productivity provided that it is used correctly.

However, the Committee is aware of the concern that increasing salinity is causing some irrigators who draw their water from lakes in Northern Victoria, especially Lake Charm, and from the River Murray below the Mildura Weir. The magnitude of the effect on agricultural production is difficult to assess because it depends not only on the level of salinity in the water but also on the type of crop or pasture, method of water application, and soil type.

Farmers have had to accept reduced production because of salinity levels or have had to change irrigation methods to utilise lower quality water. Changes in irrigation systems such as from overtree sprays to micro irrigation can cost an individual between \$2000 to \$3700/ha in capital expenditure. This cost is partly offset by associated benefits of better water application.

### 5.5.2 Present Aggregate Costs

Losses to agricultural production due to the salinity of Lake Charm water have been estimated by the Rural Water Commission to be \$100,000 per year. The Commission has also supported the estimate by Maunsell and Partners that the application in the Sunraysia region of saline irrigation water is causing an annual production loss of \$0.1 million. This value includes the horticultural areas of Curlwaa and Cobdigla in N.S.W. Cary et al (1982) estimated the annual losses in Victorian section to be about \$0.05 million per annum.

### 5.5.3 Future Damage Costs

The future predictions of water salinity in the River Murray depend upon the influence of dryland salinity and natural groundwater flows both in Victoria and New South Wales, and the contribution of salinity from the irrigation areas.

If salinities within the Sunraysia region increase at the rate of 3.6 mg/L per annum (6FC units), as noted in section 4.3, by the year 2010 the increase in stream salinity will be 100 mg/L (160 FC units). Assuming that there will be very little change to irrigation systems, the annual cost would be about \$0.2 million.

## 5.6 WATER SALINITY - IRRIGATED AGRICULTURE - SOUTH AUSTRALIA

### 5.6.1 Present costs

Because of the fluctuations in river salinity levels, many studies (Australian Mineral Development Laboratories 1977, Maunsell and Partners 1979, Dwyer Leslie 1983) have examined the incremental cost to South Australia of salinity. Most studies have adopted a level of 240 mg/L (400 FC) upon which to base their calculations.

Dwyer Leslie (1983) has estimated that the average annual savings in economic losses to agriculture per mg/L reduction in river salinity measured at Morgan to be about \$28,300. The Engineering and Water

Supply Department in South Australia used a similar estimate of \$27,800 per mg/L as the impact of salinity on irrigated agriculture in the Riverland. This estimate was included in a paper presented to the Committee on 4 October 1983.

Accurate estimates of damage to agricultural production are difficult to determine for it is the peaks in salinity during critical periods of horticultural crop development, build up of soil salinity, and interaction of irrigation system and water salinity that cause the damage. An estimate using salinity tolerance data, an average value of 350 mg/L of salinity in the irrigation water, and the gross value of production, calculated that the gross annual loss of production to the Riverland was about \$2.5 million. The gross value of agricultural production attributed to commodities dependent on irrigation with Murray River water is about \$128 million (1984). The evidence presented by South Australian Government officers estimates that potential production is being reduced by about 20% per annum, or at least \$25M per annum, than if water contained no salt.

In a paper to the Combined Irrigation Advisory Board in July 1983, D. Anderson (Rural Water Commission, Senior Economist) estimated that Victorian irrigation areas increased the River Murray water salinity at Morgan, South Australia, by 35-70 mg/L at an annual cost of \$3-6 million.

### 5.6.2 Future Damage Costs

The future impact of water salinity on agriculture in the Riverland depends upon the future of the river salinity levels. South Australian officials expressed concern over the increasing areas of dryland salinity as well as the possible influence of rising groundwater in both Victorian and New South Wales irrigation areas.

Accepting the evidence from South Australia that the salinity level of the water in the River Murray entering South Australia is increasing at the rate of 3.6 mg/L/year and using the average costs presented above (\$25,000/mg/L rise) future annual losses at the end

of the next thirty years have been calculated. At this time, estimated losses in the Riverland of South Australia, if nothing is done, could reach \$4.7 million per annum. However, if all irrigation was converted to under-tree sprays, the loss would be \$3.4 million per annum.

## 5.7 WATER SALINITY - DOMESTIC AND INDUSTRIAL USES - VICTORIA

### 5.7.1 Present Costs

Even within the salinity range suitable for potable water, salinity can create extra costs by corrosion of metal fittings and the requirement of extra treatment for water used for special purposes. The cost relates not only to the total salt concentration but also to the actual type of salts in the water supply. No survey work on the impact of salinity on domestic and industrial consumers has been undertaken in Victoria, but it is very likely that extra costs would be involved. Peck et al (1982) estimated the damage cost in northern and western Victoria as \$2.9 million per year. This figure is an estimate of the annual household costs due to salinity in excess of 200 mg/L. Details are shown in Table 5.3.

**Table 5.3**  
Estimated Annual Household Costs\*  
(1984 Value)

Area	Cost \$M.
Wimmera-Mallee distribution system	1.2
Towns and Cities in Northern & Western Victoria	1.7
<b>Total</b>	<b>2.9</b>

- \* Using the following formula  $C = 0.2 H (S-200)$   
 C = household cost  
 H = number of households in area  
 S = Salinity (mg/L total dissolved solids)

The formula used by Peck et al was derived by taking account of American results and estimates by AMDEL for South Australia.

Not included in the table, but of importance, is the regional centre of Geelong which has a salinity problem from the Barwon River. No data were supplied on the costs of water treatment, although a joint project between Geelong Water Board, Environment Protection Authority, Geelong Regional Committee and Rural Water Commission had invested \$120,000 into data collection on the Barwon River. Similarly, no evidence was supplied on the effect of stream salinity on domestic users in the Hopkins and Glenelg catchments. The limited data on the costs and effects indicated the need for a State-wide investigation.

### 5.7.2 Future

Estimates of the future costs of salinity to domestic users depend on both changes in the salinity levels and in the size of the population. For the Wimmera-Mallee stock and domestic system it has been assumed that salinity levels will not change significantly and that any changes in total costs will be due to the population changes. The assumption considers that the population will continue to increase at a similar rate as the last ten years so that the population will increase by 3% p.a. at the end of thirty years. This will then cause the future losses to be about \$1.3 million per annum. However, if the salinity increases by 100mg/L plus the above population increase, the costs could reach \$2.2 million per annum.

Similarly for the North West of Victoria, it is assumed from the municipal survey that many municipalities have recognised a deterioration in water quality. Assuming an increase in salinity of 100 mg/L in most water courses, plus a population increase of 5.7%, at the end of the next thirty years the costs in northern Victoria could reach \$4 million per annum.

These values do not consider the Geelong area which is expected to double its water use over the next thirty years. Costs of the Hopkins and Glenelg catchments are not considered.

## 5.8 WATER SALINITY - DOMESTIC AND INDUSTRIAL - SOUTH AUSTRALIA

### 5.8.1 Present

The Engineering and Water Supply Department of South Australia estimate that there are 183,670 equivalent households wholly dependent on River Murray water in South Australia. Using a recent estimate by AMDFL of 37.5c per year as the cost of each mg/L rise in salinity, the Department has estimated the total disbenefit as \$68,830 per mg/L rise per year.

Peck et al (1983) used similar figures to calculate the current cost of using saline water. Using a threshold level of 200 mg/L, they estimated the annual household costs due to salinity in Adelaide to be \$7.2 million.

### 5.8.2 Future

Two estimates are provided. The first assumes that salinity remains at its present level within the next thirty years and that the population will double. If this occurs, the predicted cost will be about \$11 million per annum. The second estimate assumes that the population will double but that the salinity in the river will also rise by 3.6 mg/L per annum. Using the cost of a rise in salinity of 37.5c per household per year, the total cost in domestic water use could be \$15 million per annum in the long term.

## 5.9 EFFECTS OF SALINITY ON MAN MADE STRUCTURES

### 5.9.1 Roads

#### Present

There is some evidence to suggest that common salt (sodium chloride) in high concentrations (greater than 3%) can reduce the strength of lime stabilised road materials. However, of far greater concern is the weakening of road foundations

where watertables are close to the ground surface or where surface water cannot drain away. Movement of water by capillary action and evaporation at the surface can result in damage to pavement and sprayed surfacing treatment. New methods, described by the Road Construction Authority, can overcome these problems. The Road Construction Authority estimated the additional annual costs for the Bendigo, Ballarat and Horsham Divisions at about \$1.1 million. The components of these costs for the Bendigo Division are shown in Table 5.4 below. Some of the costs are shared between the municipalities and the Road Construction Authority.

**Table 5.4**  
Estimated additional annual costs for roads:  
Bendigo Division

	Sealing	Maintenance	Construction	Total
	\$	\$	\$	\$
Declared Road System/ State Highway & Main Roads	20,000	300,000	300,000 (12 km)	620,000
Unclassified roads	20,000	200,000	240,000 (20 km)	460,000

Source: Road Construction Authority Submission, July 1983.

The Shire of Swan Hill indicated that at present the cost of salinity damage to the roads was not great because of the adoption of new techniques but there was a vast legacy of roads that have been closed due to salt pans.

### Future Costs

Results from the municipal survey indicate that road development and maintenance in saline environments are problems on the increase. It is believed that costs will increase at the rate of 2% per annum so that the cost within 30 years could be an additional \$2.0 million for the State.

#### 5.9.2 Pipeline Systems

High watertables can also increase the costs of pipeline systems. An example was given to the Committee by the Shire of Deakin. The Sewerage Authority had to design a reticulation system at a much shallower depth with more frequent pumping stations than normal because of high watertables. However, no cost figures were given. Installation of buried cables and pipelines can be difficult in areas affected by high watertables.

#### 5.10 SUMMARY

The aggregate damage costs of salinity are summarised in Table 5.5.

**Table 5.5**  
Annual Damage Costs of Salinity in Victoria  
and River Murray

	<u>Present Loss</u> \$ Million <u>1984 values</u>	<u>Predicted Loss</u> in 30 years time \$ Million <u>1984 values</u>
<b>SOIL SALINITY</b>		
<b>Dryland Agriculture</b>		
- Victoria - scalds	0.10	0.15
- Victoria - seepage	2.9 to 3.7	6.0 to 8.3
<b>Irrigated Agriculture</b>		
- Victoria - Kerang	20 - 22	30.5
- Victoria - Shepparton	11	57
- Victoria - Nangiloc	0.35	0.35
<b>WATER SALINITY</b>		
<b>Irrigated Agriculture</b>		
- Victoria - Sunraysia & Tresco	0.06	0.06
South Australia-Riverland	2.5	4 to 6
<b>Domestic</b>		
- Victoria - Wimmerra Mallee	1.2	2.2
- Victoria - Nth & Nth Western	1.7	4.0
- Victoria - Sth & Sth Western	?	?
- South Australia	6.0 to 7.2	16-18
<b>Industry</b>		
- Victoria	?	
- South Australia	0.5	1
<b>Roads</b>		
	1.1	2.0
TOTAL VICTORIA	38.8	119.7
TOTAL SOUTH AUST. (River)	10	22.1
TOTAL	48.8	141.8

## 5.11 ABATEMENT COSTS

The costs and expenditure in ameliorating or controlling the current salinity level must also be included and are shown in Table 5.6. A description of the applicability and effectiveness of the techniques is provided in Chapter Seven.

### 5.11.1 On Farm

#### **Dryland**

Except where economic benefits can be gained from cropping, the average cost of \$360/ha for the rehabilitation of salt scalds has militated against their treatment. Farmers have mainly treated seepage salting sites by sowing salt tolerant vegetation and fencing the area at a cost between \$400 - \$1500/ha. The total expenditure by individuals on either the treatment of discharge sites or recharge areas to assist in controlling salinity is unknown. Government expenditure has been provided through Forest Commission Assistance Schemes, \$600,000 since 1980, and for works undertaken by the Soil Conservation Authority, \$500,000 per annum.

#### **Irrigation**

Direct abatement costs using piped sub-surface drainage has only been used to protect horticultural areas in Sunraysia, Nyah, Tresco and Woorinen irrigation areas. These were installed predominantly before 1970 . In horticultural areas, other farmers have changed irrigation systems at a capital cost of between \$2000 - \$3700/ha. In the pastoral and cropping areas farmers have relied on sowing salt tolerant vegetation. The total expenditure undertaken by individuals on these projects is unknown.

PAST EXPENDITURES ASSOCIATED WITH CONTROL  
OF SALINITY IN VICTORIA  
( \$'000)

	<u>1977-78</u>	<u>1978-79</u>	<u>1979-80</u>	<u>1980-81</u>	<u>1981-82</u>	<u>1982-83</u>	<u>1983-84*</u>
<b>CONTROL PAID FOR BY PRIVATE INDIVIDUALS</b>							
- For works undertaken by individuals and financed by salinity loans from Rural Finance Commission.	N.A.	N.A.	200	681	750	880	N.A.
- For investigations and operation of works undertaken by Water Commission and paid for by irrigators.	841	939	1079	1377	1708	1785	2080
- For tree-planting by individuals which is assisted by the Forests Commission and the Soil Conservation Authority.	28	32	26	62	92	136	170
<b>CONTROL PAID FOR BY PUBLIC</b>							
- For works undertaken by Water Commission under National Water Resources Program.	2232	3436	3893	3555	3651	3959	4756
- For works, investigations and extension undertaken by the Soil Conservation Authority.	147	149	205	233	287	487	650
- For investigations, tree-growing assistance and extension undertaken by the Department of Agriculture.	N.A.	N.A.	285	398	552	535	578
- For works, investigations and extension undertaken by the Forests Commission.	60	60	80	201	290	310	280
For investigations undertaken by the Department of Minerals and Energy.	100	100	200	378	345	335	267
- For investigations and works undertaken by River Murray Commission and funded by Victorian Government.	A total of about \$4m between 1975-76 and 1982-83.						

\* Estimates for all years have been provided by relevant Government Departments and the estimates for 1983-84 represent proposed spending.  
Source: Michael Read & Associates (1984).

Indirect abatement costs have included landforming and lasergrading. It has been estimated that about \$70 million has been spent by individuals in the Goulburn Murray Irrigation District on these processes since 1979. Costs to the individual are of the order \$900 - \$1800/ha. Government assistance through the Rural Finance Commission has provided about \$3 million since 1981 as concessional loans. In the Shepparton region, it is believed that in excess of \$10 million has been spent since 1979 on the installation of private groundwater pumps.

### 5.11.2 OFF FARM

#### **Groundwater Pumping - Protection of Land**

The Shepparton Phase A programme which protects 3000 ha of horticultural land and 11300 ha of pasture land was completed in 1981 at a capital cost of \$3.2 million. Half of this amount was funded by the Commonwealth National Water Resources Programme, the remainder by the Victorian Government. Annual operating costs of the Rural Water Commission controlled pumps is of the order \$230,000 which is contributed to by irrigators in the protected areas.

#### **Groundwater Pumping - Protection of Streams**

The Lake Hawthorn and Mildura-Merbein groundwater interception schemes prevent saline groundwater from entering the River Murray. The Mildura-Merbein scheme was completed in 1980 at a capital cost of \$2.5 million and has annual operating costs of about \$97,000. Lake Hawthorn was completed in 1968 at a capital cost of \$700,000. Annual operating costs are of the order \$70,000.

#### **Disposal Schemes**

Sunraysia horticultural areas, which are protected by sub-surface drainage dispose of their effluent to natural salt

basins. About \$190,000 was spent by the Rural Water Commission on maintenance of these basins during 1982-83. The enlargement of the Woorinen evaporation basin was completed in 1980 at a capital cost of \$302,000.

The Barr Creek - Lake Tutchewop interception scheme protects the River Murray and downstream users from saline inflows. The scheme was completed in 1968 at a capital cost of \$890,000 and has annual operating costs of \$48,000.

### 5.11.3 Other Costs

Indirect abatement costs are also associated with the provision of advisory and investigative services of different departments. These will be discussed in the relevant chapters.

## 5.12 CONCLUSIONS

The economic effects of salinity result from damages caused by induced salinity and the costs of remedial measures. The effects of salinity on agricultural production, and on man-made equipment and structures have economic consequences. The total cost of salinity to Victoria is about \$50 million per year, of which \$10 million is the current level of expenditure on salinity control. If no further control measures are introduced, the damage due to salinity is likely to treble within the next thirty years.

### Damage Costs

- (i) The annual loss in value of agricultural production in Victoria has been estimated as \$0.1 million due to salt scalds, \$2.9 - \$3.7 million due to seepage salting in dryland areas, and \$32 million due to high watertables and salinity in irrigation areas. This corresponds to a

loss in productivity of 7% in the Shepparton Region and about 25% in the Kerang Region. Without further control measures, the cost in dryland areas could double and in the Shepparton Region could increase five fold within thirty years.

- (ii) The cost of damage to household equipment in Victoria caused by supplies from the Wimmera-Mallee distribution systems is \$1.2 million per year and for supplies to other towns and cities in Northern and Western Victoria is about \$2 million per year.
- (iii) Costs due to the weakening of road foundations by high watertables and the effect of salinity on road materials may be significant. The additional maintenance costs in the Bendigo, Ballarat and Horsham divisions of the Road Construction Authority is \$1.1 million.
- (iv) Estimates of costs to South Australia due to high levels of salt in the River Murray are \$2.5 million per year in the Riverland Irrigation Region and \$6 million per year for domestic and industrial water users. The proportion of this cost which might be associated with inputs of salt from Victoria has not yet been determined.

#### Abatement Costs

- (v) Salinity control measures which have already been implemented in Victoria include collective interception and disposal schemes for saline groundwater and drainage water in Northern Victoria, and on-farm measures by landholders in both irrigated and non-irrigated regions. Expenditure on both public and private schemes, financed through government departments and on associated research and investigation in Victoria, has been about \$10 million per year in recent years. Unidentified expenses, particularly by individual farmers, may add significantly to this sum.

## CHAPTER SIX

### ENVIRONMENTAL, HEALTH AND SOCIAL EFFECTS

#### 6.1 INTRODUCTION

In addition to those impacts which are measurable in financial terms, salinity can affect environmental and human wellbeing in ways that have no direct economic repercussions. Of particular importance are the effects on biota in the natural environment, and on human health, and the cumulative impact that these and the economic effects may have on the wellbeing of individual people and the community.

#### 6.2 NATURAL ENVIRONMENT

Ecosystems will respond to changing conditions in different ways depending upon such factors as the period of time over which changes occur, whether the changes are permanent or temporary and whether other species can capitalise on the new niches in the changed environment.

##### 6.2.1 **Terrestrial Environment**

Salinity can influence the natural environment either directly, as a result of salt concentration, or indirectly, where the causes of salting are also responsible for losses in flora and fauna. Seepage salting and scalds normally affect cleared agricultural land, but nearby areas supporting remnant native vegetation can be damaged. The Committee's consultants (ACIL Australia, 1983) refer to a dearth of information on the impact of dryland salinity on the natural environment, with no specific studies documenting the impact of salinity on either terrestrial or aquatic fauna. However, it is acknowledged that native vegetation is susceptible to salinity so some damage must occur with a resultant change in habitat.

In its submission, the Forests Commission indicated that the overall impact of dryland salting on native tree cover is generally not yet serious, other than in relatively localised areas, such as the Dundas

Tablelands. Dryland salting does not generally occur in native forests, but seepage salting and high water tables are having a significant impact on forests in northern Victoria. The extent of salinisation and waterlogging in the Cohuna Forest District is presented in Table 6.1

**Table 6.1**  
**Status of Reserved Forests - Cohuna Forest District**

State Forest	Area (ha)	Main Species	Problems	Stability*
Appin	294	Black Box	Encroaching salinity.	Stable
Wandella	984	Black Box	Encroaching salinity and waterlogging.	Stable
Benjeroop	334	Black Box	Modifications to drainage by adjacent levees.	Very unstable.
Kerang	259	Black Box	Major drainage problems.	Unstable
Mystic Park	588	Black Box	Increasing salinity drainage modifications.	Unstable
Bael Bael	1,540	River Red Gum 58% Black Box 42%.	Increasing salinity	Fairly stable.

\*Stability - indicates whether problems are becoming worse with time or whether change in the present system is slow.

Source: Forests Commission Victoria Submission, September, 1983.

Most of the river red gum forests in northern Victoria, totalling over 20,000 ha are not currently affected by salinity or serious water-logging. However, the potential for serious damage to the forest ecosystem is present in the Barmah Forest where river management practices have altered the normal flooding pattern. This will have implications for timber, fauna habitat, honey production and recreation. Of the 8,000 ha of black box forest about 1,500 ha are badly damaged, 1,500 ha are seriously at risk or contain isolated problem areas (900 ha). Leaghur Forest is the only large Black box forest without any major problem (1,900 ha).

Narrow river red gum frontage along the Loddon River, Bullock and Barr Creek frontages, are seriously affected by salinity and water-logging.

The causes, effects and control strategies involved with salinity can all either modify or destroy natural wetlands. The major consequences are to modify the food chain, and the ability of the vegetation to provide refuge or breeding habitats for wildlife, so that the ecosystem loses its original species diversity and ecological value.

Saline groundwater inflow can modify or destroy vegetation which provides roosting, feeding and nesting habitat those of many species of birds. Wetlands in the Kerang Region, especially for the Marsh System and Cullens Lake, are suffering from high watertables and salinity. In Second Marsh, 76 ha of trees have died and another 77 ha are affected. Several published reports and evidence presented to the Committee by the Victorian Field and Game Association suggests that seepage from irrigation on lunettes on the periphery of the Marsh has added to the regional groundwater causing shallow watertables and saline soils in specific locations. The maintenance of watertables by seepage, in addition to prolonged inundation is believed to have reduced tree vigour and prevented regeneration. These changes, together with a change in aquatic vegetation resulting from increased salinity in the water itself, can change the capacity of the ecosystem to support wildlife species. A comprehensive study



Birdlife in the wetlands of Northern Victoria

of the whole marsh system should be undertaken, so as to develop a balanced management strategy in relation to watertables, salinity and flooding.

A similar situation occurs with the use of natural depressions for the disposal of saline effluent. During the early years, evaporation basins can provide a habitat for wildlife but, as salinity increases, the area becomes unsuitable for freshwater dependent species. However, during very wet years or in depressions that periodically receive fresh water, these basins can provide a feeding ground for many bird species. Often the number of birds may not be affected but the species diversity will be. Not only is the salinity of the water of concern in wetlands, especially those receiving effluent or acting as storage reservoirs for irrigation, but also the depth of water within the depression may affect the feeding ability of birdlife. This is difficult to assess because of the ability of many birds to frequent several feeding grounds per day. Increasing salinity levels eventually reduce the value of lakes and wetlands. Degradation of the lakes and wetlands, including the use of some wetlands for evaporative basins in northern Victoria, has had a significant impact on wildlife including migratory waterbirds. (Dwyer Leslie, 1984).

Surface drainage in irrigation districts is essential to help reduce accessions to the groundwater. Unfortunately, to provide district drainage, natural depressions and low lying land are dredged, altering the natural flow pattern, salinity of water and topography of these wetlands. These changes cause a modification in the aquatic flora and fauna and riparian vegetation. Several examples such as Pyramid Creek and Bullock Creek were presented to the Committee. Drainage can have two effects on the environment. Firstly, it can modify or destroy natural wetlands by upsetting the water balance or, secondly, it may assist in the rejuvenation and regeneration of trees that would otherwise be destroyed by high watertables. In some cases, such as Hirds and Johnson's Swamps, modifications in the management of the water balance of wetlands after drainage, by pumping water or installing weirs, have been necessary to maintain original wetlands on a smaller scale. Obviously there must be a

compromise between the basic aim of the drainage scheme and wildlife conservation. This may require a broader study into environmental effects than individual projects.

It has been suggested that because of flood control works and river flow regulation, many wetlands are threatened by salinity because the frequency and duration of flooding are being reduced. The Victorian Field and Game Association suggest that many areas of wetlands are no longer covered by floodwater so affecting the habitat, because leaching and flushing is not as widespread. Often these flooded areas, although sufficient for vegetation, do not always have sufficient flood duration or peak to stimulate many waterfowl to breed. This remains a contentious issue and more research is required to examine the overall effect in an ecosystem where a shallow saline watertable exists.

Cowling (1973) estimated that more than 200,000 ha, or about half of the original extent of wetlands in Victoria, have been altered since settlement so as to be unsuitable for at least some waterbirds. This is of concern to the Committee, for given that there is only about 5% of the land in the State set aside for conservation purposes, there have been relatively few environmental impact studies conducted into the effect of salinity and associated waterlogging problems. Another question that has not been addressed, is the proportion of wetlands within the State that can be altered from freshwater to saline without causing species to become extinct and upsetting the ecological balance within an area.

### **6.2.2 Water Environment**

There is little specific information on changes caused by salinity on Victorian streams. Most changes to the aquatic habitat have other causes, such as drainage, exotic species, diversion, flow modifications, changes to water temperature and barriers to fish movements such as dams, weirs and locks.

Every State has natural saline lakes. They are especially numerous in semi-arid areas and on the volcanic plains of western Victoria. Salt lakes have greatly decreased species diversities compared to fresh-water ecosystems. Secondary salting by increasing the salinity of lakes and adjacent lands can severely damage or destroy the existing ecosystem. Changes in the salinity regime may mean that the species composition changes rather than any adverse impact on production.

An indirect effect of salinity is to increase the use of soaps and detergents. The consequences of these increased uses and wastes from water treatment plants should also be considered in examining water quality and environmental impact further downstream.

Conservation of flora and fauna and the retention or enhancement of related values such as landscapes and aesthetics are difficult concepts to evaluate and their maintenance can be technically difficult to achieve for the long term. Nevertheless, they are important values that need to be fully considered in evaluating the need for, and nature of salinity control programmes. The information presented to the Committee indicates that salinity is contributing to environmental degradation. However, the environmental information available is not at a level of comprehensiveness or in a form that can be used easily in the process of developing salinity control programmes.

### **6.2.3 Abatement Costs**

Protecting natural areas from the adverse effects of salt and waterlogging is often difficult. Work to establish the significance of natural areas and the current and potential threats to their long term survival is a vital first step. Some of this work is already available. In addition, recent work being undertaken by the Arthur Rylah Institute for the Ministry for Planning and Environment should eventually provide broad scale information suitable for municipal and regional planning.

### 6.3 HEALTH EFFECTS

Currently within Victoria, the health aspects of salinity in drinking water supplies appear to be minor. There is no information on any economic effect.

Guidelines to the health aspects of salinity in water are included in a publication from the Commonwealth Department of Health entitled "Desirable Quality for Drinking Water in Australia (1980)". These guidelines are intended to help authorities determine appropriate drinking water quality.

The parameters used include various chemicals that contribute to salinity in water, such as calcium, magnesium, chloride, nitrate and sulphate. Two chemicals that may be causing problems with water supplies and which have been brought to the attention of the Committee are sodium and nitrate.

#### 6.3.1 Sodium

Sodium is not currently listed in the water quality objectives because of insufficient data on the health aspects of sodium in water. However, as noted by Dr. B. Scoggins, Howard Florey Institute for Medical Research, sodium in the diet is known to be related to hypertension and mortality from vascular disease.

Sodium has recently been the subject of reports from the World Health Organisation (1979) and National Health and Medical Research Council (1982). The conclusion of both reports is that community sodium intake should be reduced for health reasons to under 100 millimoles per day (equivalent to 6 g. of sodium chloride). The WHO report goes on to suggest that a longer term goal of 3 g. of sodium chloride may be desirable but that further research is necessary.

In line with these recommendations the reports suggest that concentrations of sodium in drinking water should be 5 mmol/L (115mg/L sodium) with a long term objective of half this concentration. The National Health and Medical Research Council concluded that the

sodium content of the water supply does not contribute significantly to daily sodium consumption unless it exceeds 5 mmol/L.

These figures cannot be converted directly into total salinity units because the proportion of total soluble salts represented by sodium is variable. However, as a rough guide, the recommended criteria are equivalent to salinity levels of approximately 450 and 230 mg/L respectively.

This sodium concentration is exceeded in a number of water supplies in Victoria and examples are given in Table 6.2. Information on Adelaide is also shown in Table 6.2.

The World Health Organisation report also suggests that due to the health significance of sodium, the concentration of chloride as a "counter-ion" now has added importance. It recommends that the chloride concentration in drinking water should not exceed 200 mg/L and the use of the previously accepted higher figure of 600 mg/L should be discouraged.

Table 6.2  
Sodium Content of Water Supplies  
(Millimoles/Litre)

City or Town	Range		Average		
<u>Victoria:</u>					
Melbourne	0.14	—	0.24	0.2	
Geelong	1.0	—	2.1	1.3	
Latrobe Valley	0.3	—	0.43	0.4	
Ballarat	0.7	—	1.9	-	
Ararat Shire (Streatham supply)	12.2	—	16.5	13.6	
Casterton	4.9	—	8.7	7.2	
Coleraine	7.0	—	9.6	8.0	
Donald	3.5	—	8.3	4.7	
Heywood				7.4	
Korong Shire (Korong Vale Basin)	3.7	—	12.2	7.0	
(Wedderburn Basin)	6.0	—	12.2	8.4	
Kowree Shire	1.1	—	8.3	5.0	
Nhill	7.0	—	19.1	13.0	
Port Fairy	10.5	—	12.6	11.5	
Portland	8.7	—	16.1	12.1	
St. Arnaud	4.0	—	8.7	6.3	
Stawell Shire (Glenorchy-Wimmera River)	4.3	—	35.6	18.1	
Warracknabeal	3.5	—	5.9	4.4	
<u>South Australia:</u>					
Adelaide	I	2.3	—	6.1	3.4
	II	2.2	—	4.7	3.4
	III	2.2	—	4.1	3.2
	IV	2.4	—	4.8	3.8
	V	0.8	—	8.5	3.6

Source: National Health and Medical Research Council (1982)

### 6.3.2 Nitrate

A recent report by Lawrence (1983) has drawn attention to the occurrence of nitrate rich groundwaters and the general rising trend in concentrations. Lawrence suggests that this recent phenomenon is possibly linked with the clearing of land and its use for agriculture. The occurrence of nitrate-rich groundwater is widespread. Some information is given in Table 6.3.

**Table 6.3**  
**Examples of Nitrogen Concentrations in Groundwater in Victoria**  
(adapted from Lawrence 1983)

Location	Depth m	TDS mg/L	NO <sub>3</sub> mg/L
Fchuca North	3.4 - 3.9	2570	140
Shepparton	9.0 - 13.2	810	87
Tabilk	5.5 - 8.5	400	58
Benalla	2.0 - 5.0	400	42
Dunolly	10.0 - 12.0	700	45
Cranbourne	28.0	665	32
North Hamilton	25.1 - 29.5	570	56

\*Current maximum criteria for drinking water is 45 mg/l NO<sub>3</sub>.

### 6.3.3 Conclusion

The Committee appreciates that health aspects of salinity in water supply could become significant in future and further research is needed. The subject is now under review by the Victorian Task Force on Urban Drinking Water quality, as part of the State Water Plan.

## 6.4 SOCIAL EFFECTS

### 6.4.1 Introduction

The social consequences of salinity result principally from its economic effects. They are reinforced by anxiety associated with a problem that is often not easily explained, is inequitably distributed in the community, and appears to be inexorably growing.

An indication of the number of people that are directly affected is given by the preliminary results of the 1984 Agricultural Census in which farmers were asked to indicate the area of their property which was salt affected.

TABLE 6.4

Number of Farms with Salt-Affected Land

Statistical Division	Number of Affected Farms
Melbourne	35
Barwon	141
South Western	312
Central Highlands	242
Wimmera	282
Northern Mallee	558
Loddon-Campaspe	529
Goulburn	271
North Eastern	12
East Gippsland	48
Central Gippsland	40
East Central	23
Total Victoria	2,493

Source: Preliminary Results, Agricultural Census, 1983-84, Australian Bureau of Statistics.

It is evident that the greatest concentration of salt-affected properties is in the irrigation regions of Northern Victoria. Only very limited social research has been undertaken in these communities in recent years.

#### 6.4.2 Economic Base and Community Structure

Salinity can have serious economic and social effects on rural communities, especially those small rural communities with no other

economies besides agriculture to sustain them. Experience in the Loddon Irrigation Region has shown that long term reductions in farm incomes will change the structure of a rural community. As the productivity of the land decreases, the younger more adaptable farmers are likely to leave the region while the older more established farmers with fewer family or loan commitments will tend to remain. Those that stay will either expand their land base to maintain viability, survive on a lower income or seek "off farm" employment. If there is little likelihood for "off farm" employment in the surrounding district then absentee ownership is likely to increase. This increase means less time is devoted to maintaining the soil resource resulting in further detrimental effects.

Not only can the salting of farmland mean either a decrease in the number of farmers or the same number of poorer farmers, but also lower incomes mean lower investment and lower expenditure in local towns and service centres. Economic multiplier effects spread through the local community. Stone (1977) has suggested that there are also "social multiplier" effects.

Similar processes occur in towns. Businesses are sold to others with lower expectations of profit and expansion. Government authorities and banks downgrade the level of managerial and other skills required in their offices as the population declines. Associated services, such as transport, are reduced and outside investment, tourism and injection of new ideas from temporaries declines.

With these changes, communities lose their esteem and may develop an apathy and parochialism that is not aimed at achievement but at maintaining the "status quo".

It is not clear to what extent, salinity will cause these changes in all communities. It certainly occurs in smaller towns with a population less than 2000 but the impact it has on larger communities has not been reported. Certainly towns with broad versatile economies, such as Shepparton, Mildura, Swan Hill, have continued to grow and prosper while others have maintained their population. However, care must

be taken with interpretation, for often these towns have distinct age distributions related to employment opportunity or retirement centres.

#### **6.4.3 Psychological Effects**

The perceptions and emotions of individual farmers and communities with respect to salinity influences their actions and decision making. One major restraint is the admission to oneself that salinity is a possible threat. For example, in an irrigation district where salinity was an increasing problem, many farmers believed they were not threatened but were not monitoring watertables on their property (Barr 1984). This threshold of awareness must be overcome if control strategies are to be implemented. A vital element is the farmer's self esteem. Salting is often seen as an irreversible threat to the productive base and a reflection of the farmer's ability. Once salinity is present and acknowledged, farmers can suffer stress, despondancy and frustration at not being able to do anything, especially, as in the dryland situation, the problem may not be caused on their property. Aesthetic value of rural areas and pride in local areas are also affected by salinity.

#### **6.4.4 Community Division/Co-operation**

Because of the differences in the location between the causes and effects of salinity, tension may develop between farmers and communities in these different locations. This tension may be caused by self interest or lack of knowledge or both.

### **6.5 CONCLUSIONS**

- (i) Rising watertables and salinity levels have affected terrestrial and aquatic vegetation and hence wildlife habitat, particularly in northern Victoria. Specific examples which have been brought to the attention of the Committee include -

- widespread death of trees in the marshes of the Avoca River as a result of saline watertables,
- damage to trees in about twenty percent of the area of black box forests in the Cohuna Forest District,
- damage to river red gum frontages along the Loddon River, Bullock Creek and Barr Creek.

The contribution of high watertables to tree decline in non-irrigated areas of rural Victoria may also be significant.

- (ii) Wildlife habitat has been affected also by salinity control measures. Artificial drainage in irrigation areas has been constructed through small natural wetlands which, once drained, lose their value to wildlife. More significant is the effect of disposing of saline effluent to natural depressions which then act as evaporation basins and can no longer support freshwater dependent species.
- (iii) Generally the effects on health of salinity in drinking water in Victoria appear to be minor. The allowable concentrations of the various chemicals that contribute to salinity in water are well established and used by authorities to ensure that the water supply is of a satisfactory quality. However, the Committee notes the increasing body of data which suggests that elevated levels of sodium in the diet may contribute to hypertension and mortality from vascular disease. Sodium is not currently listed in water quality objectives. The National Health and Medical Research Council has recently recommended a maximum level for drinking water. This level is currently exceeded in the water supplies to a number of towns in western Victoria.
- (iv) The Committee has been exposed to a depth of feeling and concern by many landholders whose property or region is affected by salinity. It has become apparent that the effects on individuals and their community are substantially greater than might be suggested from the overall impact of salinity on the national economy.

- (v) The affected landowner suffers, not only because of the immediate loss in farm production but also because he is afflicted with a problem that is inequitably distributed throughout the region, may have no guaranteed solution that is within his power to implement, and is growing. In extreme cases the reduced profit and high cost of any remedial works that might be undertaken leads to despondency, stress and possibly social breakdown as farmers are forced to live with declining returns.
  
- (vi) These effects have been more evident in parts of irrigation regions than in dryland regions of Victoria. The social effects of salinity are often difficult to isolate from other problems affecting rural communities. There is evidence that a combination of factors, including salinity, have resulted in reduced opportunities for employment in some areas leading to the departure of youth, reduction in service facilities and diminished regional development.

## PART II

### SALINITY CONTROL SCHEMES

Part II (Chapters 7 and 8) presents the Committee's assessment of technical methods by which salinity might be controlled and the future application of these methods within regions of Victoria.



CHAPTER SEVEN  
SALINITY CONTROL TECHNIQUES

7.1 INTRODUCTION

This chapter contains the Committee's findings on the applicability of the physical and biophysical techniques that can be used to control salinity. The techniques may be used to prevent the onset of salinity problems, control the severity of the problems, or reclaim parts of the environment.

The range of techniques is shown in Table 7.1. Some are aimed at preventing or limiting the extent of the problem by addressing the causes, which have been described in Chapter 2. Others seek to mitigate the effects. Several techniques result in the need to dispose of saline wastes.

In this chapter each technique is assessed separately. A brief description of the method is given, its current application noted, and its apparent benefits, costs and future potential described. The relationships between the techniques when applied to a specific region as part of a salinity control strategy are outlined in Chapter Eight.

The Committee received substantial information on the control techniques through submissions from landholders, community groups and government departments. This was supplemented by data contained in the report for the Committee by consultants on "The Application of Salinity Control Techniques in Victoria" (Gutteridge, Haskins and Davey, 1983) and "Salinity Control in Northern Victoria - a Strategic Study" (Dwyer Leslie, 1984), and by responses to those reports.

2 DRYLAND AGRICULTURE

Techniques that can be used for the control of dryland salting are shown in Figure 20. They are directed either at the treatment of the affects of salinity in the discharge zone of the groundwater or at the treatment of the causes by reducing the rate of recharge.

Table 7.1

Salinity Control Techniques

Location of Salinity Problem		Preventing / Limiting The Extent Of Salinity	Accommodating The Effects of Salinity	Disposal of Saline Water /Salt.
SALINE SOILS	DRYLAND AGRICULTURE	Reduce accession to watertable at recharge zone - <ul style="list-style-type: none"> <li>seal watersupply channels to prevent leakage to watertable</li> <li>seal/relocate dams and ponds</li> <li>modify catchment surface by use of interceptor drains, contour banks</li> <li>modify cultivation methods to reduce accessions to groundwater                             <ul style="list-style-type: none"> <li>1 introduce high water uptake crops &amp; intensive cropping</li> <li>2 constrain tree clearing</li> <li>3 encourage tree planting and re-vegetation</li> </ul> </li> </ul> Reduce rise in watertable after accession - <ul style="list-style-type: none"> <li>4 pump groundwater - use on farm</li> </ul> DISPOSAL - - - - - Reduce erosion at salt scalt by appropriate vegetation/cropping	<ul style="list-style-type: none"> <li>plant salt tolerant vegetation on discharge zone or salt scald</li> <li>manage farmland to minimise capillary rise on discharge zone</li> </ul>	To Land <ul style="list-style-type: none"> <li>evaporation basins harvesting &amp; marketing salt.</li> </ul>
	IRRIGATED AGRICULTURE	Reduce accession to watertable - <ul style="list-style-type: none"> <li>seal irrigation channels</li> <li>reduce required rate of water application by                             <ul style="list-style-type: none"> <li>irrigation techniques, e.g. drip irrigation</li> <li>use of crops requiring less water.</li> <li>landforming</li> <li>irrigation scheduling</li> </ul> </li> <li>retire land from irrigation</li> <li>improve surface and tile drainage                             <ul style="list-style-type: none"> <li>reuse drainage water</li> </ul> </li> </ul> DISPOSAL - - - - - Reduce rise in watertable after accession <ul style="list-style-type: none"> <li>Constrain tree clearing, encourage tree planting</li> <li>Pump groundwater -&gt; Use</li> <li>-&gt; DISPOSAL - - - - -</li> </ul>	<ul style="list-style-type: none"> <li>utilise salt tolerant crops</li> <li>modify farm management to minimise salt rise by capillary action</li> <li>drain waterlogged areas DISPOSAL -</li> </ul>	
SALINE WATER	RIVERS, STREAMS, CHANNEL, FLOWS	<ul style="list-style-type: none"> <li>seal freshwater channels to prevent salt pick up</li> <li>reduce discharge of saline effluent to streams etc. by                             <ul style="list-style-type: none"> <li>drainage reuse</li> <li>effluent treatment</li> </ul> </li> <li>DISPOSAL - - - - -</li> <li>reduce discharge of saline groundwater by                             <ul style="list-style-type: none"> <li>reducing accessions to watertable by above techniques</li> <li>intercepting groundwater discharge</li> </ul> </li> <li>DISPOSAL - - - - -</li> <li>intercept saline surface water</li> <li>DISPOSAL - - - - -</li> </ul>	<ul style="list-style-type: none"> <li>blend saline water with freshwater                             <ul style="list-style-type: none"> <li>fresh groundwater</li> <li>dilution flows from storage</li> </ul> </li> <li>construct a freshwater bypass, using Murray River to collect &amp; transport saline drainage</li> </ul>	To Rivers <ul style="list-style-type: none"> <li>effluent/ drainage discharge</li> </ul>
	WETLAND RESERVOIRS	<ul style="list-style-type: none"> <li>reduce evaporation loss</li> <li>release saline water layer from bottom of storage</li> <li>increase freshwater input by                             <ul style="list-style-type: none"> <li>flushing from streams and channels</li> </ul> </li> <li>modify catchment area to increase run-off in salt free areas</li> </ul>	<ul style="list-style-type: none"> <li>adopt seasonal withdrawal and off-stream storage during periods of lower salinity in river or stream.</li> <li>introduce salt resistant crops for irrigation with saline water</li> <li>adjust irrigation techniques to cope with higher salinity</li> </ul>	To Groundwater <ul style="list-style-type: none"> <li>deep injection</li> </ul>
	GROUNDWATER	<ul style="list-style-type: none"> <li>regulate pumping from aquifers subject to saline intrusion</li> <li>recharge aquifers artificially with freshwater.</li> </ul>	<ul style="list-style-type: none"> <li>retire land from need to irrigate</li> <li>install salt resistant equipment e.g. pipes, hot water systems</li> <li>treat saline water before use.</li> </ul>	

SALINE WATER CAN BE TREATED BY DESALINATION OR EVAPORATION

# CONTROL OF DRYLAND SALTING

## RECHARGE AREAS

## DISCHARGE AREAS

Land of low agricultural capability; steep and rocky hill country

Good quality agricultural land

Annual rainfall < 600 mm

Annual rainfall > 600 mm

Range of options depending on recharge potential, present land use and landowner preferences

Non-commercial native forest

Agro-forestry/ woodland grazing

Commercial forestry

Agro-forestry for timber or pulp-wood

Agro-forestry: trees for wood and/or fodder, shelterbelts

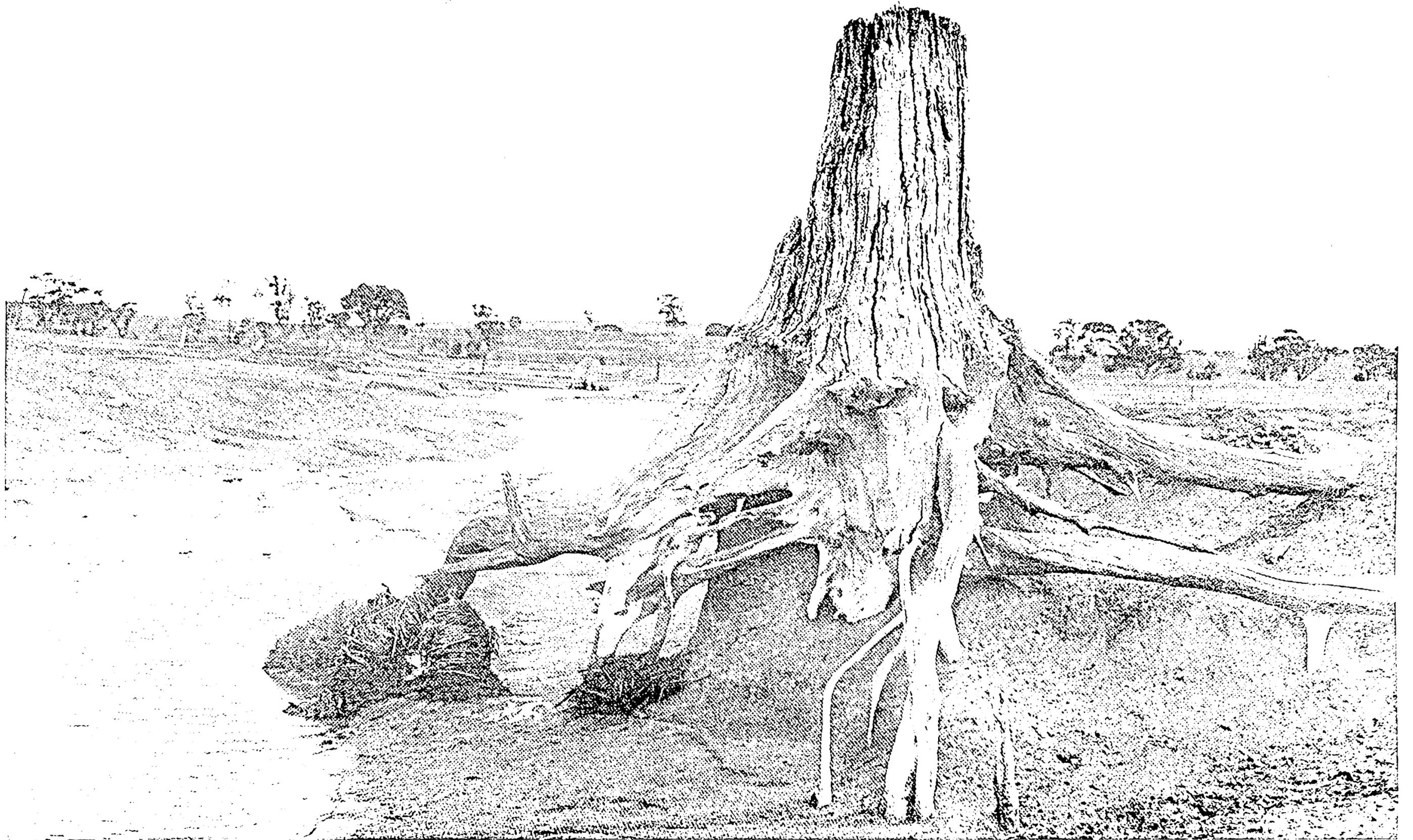
Perennial pastures e.g. lucerne

Reduced length of fallow  
Soil improvements: physical, chemical & biological impediments to root development removed

Modified grazing and crop management practices

Erosion control, improvement of soil drainage

Establishment of salt tolerant grasses and/or trees. Limited grazing.



Dryland salting and associated erosion at Berrimal

### 7.2.1 Treatment of Salt Affected Sites

Techniques for the treatment of exposed saline subsoils (salt scalds) require soil amelioration by cultivation, application of gypsum and sowing of vegetation. Attempts at rehabilitation of these sites depends upon the future productivity of the land and costs involved. As indicated by Mr. Speedie of the Soil Conservation Authority at Swan Hill, implementation is occurring where former grazing land is now being used for cropping in the Birchip area. In other areas, even if rehabilitation is only partially successful, advantages in preventing further degradation by erosion are gained.

For saline seeps, where the groundwater has risen, the most common practice in all areas has been the establishment of salt tolerant species, both grasses and trees, fencing and careful stock management. In areas of severely salinized soil, costs of \$1700 per affected hectare, as indicated by the Shire of Violet Town, can limit adoption, as the land is not restored to its original productivity. The Soil Conservation Authority recommended treatment of salt affected sites so as to prevent further degradation by salinity and erosion and further detrimental consequences on water quality in streams.

### 7.2.2 Recharge Reduction in Dryland Areas

Techniques available for the reduction of recharge on farms include the better utilization of soil water by plants, and practices which modify either the soil or landscape to reduce percolation of water to the groundwater.

#### Retention of Existing Tree Cover

The maintenance or control of the density of remnant native vegetation in recharge zones of a catchment can maintain the pristine hydrological balance and, as stated by the Forests Commission, should be recognised as a control technique. Associated benefits are the maintenance of native flora and fauna, influence on water quality in streams and aesthetic value. At present, implemen-

tation is not widespread on a voluntary basis. Some municipalities such as the Shire of Wycheproof have attempted to introduce policies to restrict the clearing of vegetation on public land such as roadsides. As highlighted by the Forests Commission, community acceptance on private land would be slow, especially when there are perceived disadvantages such as vermin and noxious weeds invading adjacent agricultural land. This was also highlighted by landholders in the Warrenbayne-Boho area.

### Revegetation

Revegetation involves the replacement or supplementation of shallow rooted agricultural species with deeper rooted trees and shrubs. These plants can extract water from deeper in the soil profile and assist in reducing the volumes of water percolating to the groundwater. Forms of revegetation can vary from commercial or non-commercial forestry, open woodland throughout the cleared catchment, or agro-forestry and shelter belts. Associated benefits of revegetation can include forestry products, improved water quality, erosion control and improved agricultural productivity due to shade and shelter. Enhancement of aesthetic and environmental factors also occur. However, the benefits only accrue after the trees have become established. Evidence from the Soil Conservation Authority and Forests Commission suggests that the technique would be successful in areas with localized groundwater problems such as the Dundas Plateau, Southern Basalt Plains, areas of the Central Highlands and North East Victoria. At present, there is wide community interest in trees, with many landholders undertaking plantings on limited areas at their own expense.

Major costs are incurred during the establishment year. Examples of costs are \$400-600 per ha for commercial hardwood forests to about \$420 per 100m for 3 row shelter belts. About 60% of costs for shelter belts are associated with labour, fencing and vermin control. However, the Committee was pleased to hear that assistance in the form of works and materials, grants of money, or supply of trees has been available from the Tree Growing Assistance Scheme, Natural

Resources Conservation League, Municipal Councils and others. Total expenditure on the planting of trees is unknown, but the Forests Commission stated that they had spent about \$600,000 on assistance projects since 1980.

Limited data are available on the quantification of types of plantings required and benefits from revegetation. Thus, the Committee was interested that the Loddon Campaspe Revegetation Project had received \$300,000 from Victoria's 150th Anniversary Fund to undertake pilot demonstrations of tree plantations, and the Forests Commission and Soil Conservation Authority had been monitoring areas in different parts of the State.

Major restraints to the implementation are the capital costs and labour requirements to plant and maintain the trees during the early years of growth. Other restrictions are the economic losses of removing land from agricultural production, especially in some grazing country, and lack of information on methods to incorporate revegetation into farm management practices. The Committee was interested to learn that a joint project between Forests Commission and Department of Agriculture, also funded by Victoria's 150th Anniversary Committee has commenced to investigate the potential of agro forestry in Victoria.

### Agronomic Practices

There is a range of agricultural practices which can reduce the rate of recharge to the groundwater. Of particular interest are those which also result in the maintenance or improvement of agricultural productivity. Specific techniques include the replacement or supplementation of shallow rooted agricultural species with deeper rooted species such as lucerne, the elimination or reduction of time that land remains under cultivated fallow and the timeliness of farm operations. Soil amelioration and aeration ploughing may also assist by allowing roots to penetrate deeper into the soil.

In dryland catchments, knowledge about the effects of these techniques on the profitability of farming in the recharge areas is known only for some locations. Research is presently being conducted by the School of Agriculture, LaTrobe University, in conjunction with the Soil Conservation Authority.

Major disincentives include the lack of reliable information on the consequences of the change and associated farm management changes. As both the Department of Conservation, Forests and Lands and the Department of Agriculture outlined, suitability of soils and other factors may limit the applicability of this technique. Other disincentives involve the need to purchase or invest in the capital equipment that may be required to undertake changes and lack of finance to implement changes that may not have an immediate effect. However, the replacement of the cultivated fallow by chemical fallowing is already occurring because of economic advantages in some locations. Present implementation of changes to agronomic practices is generally unco-ordinated on a catchment basis. Improved agronomic techniques will be an important component in any strategy but specific recommendations will have to be formulated on a regional or location specific basis which offer both individual and community benefits.

#### Seepage Control from Water Storages and Conduits

Leakage of water to the groundwater from earthen storages and channels can be reduced by lining the storages and lining or piping the channel supply. On the permeable soils in the Mallee, either technique should reduce channel seepage and contribution to the regional watertable. Savings in water of up to 90% and improvements in water quality after the open channel system on the Millewa region was replaced by pipelines, were reported by the Millewa Branch, Victorian Farmers and Graziers Association. Mr Pickering, a farmer from Meringur also commented that some salt-affected areas in the region showed marked improvement after the pipeline was installed, but unfortunately the effect on the regional watertable was not monitored.

The Wimmera-Mallee stock and domestic supply system would cost about \$440 million to replace entirely by pipeline and reticulated supplies on-farm, according to the Rural Water Commission. This would provide benefits in savings of water, improvement in water quality for domestic use, and reduced maintenance costs especially after drought years. However, the effect on regional watertables is unknown. Recently, investigations have commenced to examine a scheme to serve the Northern section of the system, where severe losses occur. Preliminary estimates indicate a capital cost of \$35 million and savings of about 40,000 ML/yr.

### Surface Drainage

The purpose of surface modification is to change the pattern of overland flow so that surface water is transferred away from both discharge and recharge zones.

Contour banks can be constructed to direct overland flow away from seeps and prevent further excessively wet conditions occurring. Banks are used predominantly for erosion control, assistance in water harvesting in most locations in Victoria, and occasionally for seep control. Mr Ryan of Dookie explained to the Committee how contour banks and grassed waterways had helped contain a saline seep but did not reduce its severity. Little investigation has been conducted into the effect of contour banks on accessions to the groundwater, and Mr Touhey of Colbinabbin believed that contour banks had helped to compound the saline seep problem in the Colbinabbin Ranges. The effects of contour banks as a technique to reduce accessions in Victoria is unknown but it is believed they have limited scope for salinity control alone.

Interceptor banks and drains are used extensively in Western Australia. Banks of earth are constructed from excavated subsoil at right angles to the downslope. These banks are intended to intercept water that is flowing over an impermeable layer in the subsoil and divert water away from the discharge site. This reduces water-logging and salt accumulation. The Committee's visit to Western

Australia indicated variable results. Mr Martin, of Benalla, presented results in protecting four hectares on his property using this technique. Monitoring on Mr Martin's property by Government Departments has been limited.

Little is known about the costs or success of such works in most areas of Victoria, but evidence from the Soil Conservation Authority suggests there is only limited scope for applicability in this State.

### Groundwater pumping

This is a direct method of managing the watertable on either a local or regional scale. The effectiveness of pumping depends upon the characteristics of the aquifer from which water is pumped, the inter-relationship with other aquifers and the feasibility of accommodating the pumped water by reuse or disposal. In dryland areas, capital costs of groundwater pumping could be of the order \$50-200 per ha protected, with annual operating costs of about \$20-60 per ha. This is close to the capital value of the land. If the pumped water could be used for irrigation, the returns may cover operating costs.

The Department of Minerals and Energy believe that groundwater pumping is the most appropriate technique to control regional groundwater problems of the alluvial flats in the Highlands such as the catchments of Bet Bet Creek and Avoca River. In the Mallee, groundwater pumping would be restricted by the permeability of the underlying aquifer and is unlikely to have widespread use.

The Committee knows of no groundwater pumps being used specifically to control salinity in dryland areas of Victoria and believes that the major limitations are the cost and the disposal of the pumped water. The Committee is also not aware of the use of piped sub surface drainage for dryland salinity control purposes. The economics and physical problems of installation and disposal are the major limitations. However, as expressed by Dr. P. Macumber of the Department of Minerals and Energy, pumping from the deep regional

aquifers in the Highland areas may eventually need to be considered as a salinity control technique. This would occur where groundwater could be reused and pumping from shallow aquifers was not a feasible proposition.

## 7.3 IRRIGATED AGRICULTURE

### 7.3.1 Treatment of Salt Affected Sites

The treatment of salt affected land in irrigation areas follows basically the same principles as in dryland agriculture. The purpose is to reduce the salt rise caused by capillary action associated with the high watertable. Salt tolerant species are utilized to maintain plant cover and water logging is reduced by drainage. In addition, irrigation water can provide some leaching of salts, and a degree of productivity can be maintained. However, as in dryland areas, treatment of discharge areas does not provide a long term solution and further salinization and high watertables will influence the need for drainage and affect stream quality.

### 7.3.2 Recharge Reduction in Irrigation Areas

Techniques that reduce the accessions to the groundwater from both rain and irrigation can assist in the control of salinity.

#### Landforming and Grading

Landforming is the process whereby the natural topography of the land is altered. In irrigation areas, landforming usually refers to providing a steeper slope. Grading refers to the smoothing of the existing slope to provide less irregularities on the surface. In irrigation areas, both processes are now being aided by laser technology which improves the precision. Benefits of landforming and grading are to provide a more controlled and uniform distribution and drainage of irrigation water and rain. Landforming to adequate slope is expected to reduce accessions to the groundwater but this remains to be demonstrated empirically.

Mr. G. Jones, of the Department of Agriculture, at Kerang, stated that landforming and laser-grading on a designed and integrated basis, was the 'key' to associated benefits of improved production and better water utilization. Mr Jones suggested that with landforming, improved surface drainage and more effective utilization of water by plants are likely to reduce accessions from rain and irrigation. Improved farm layout has also lowered labour requirements per hectare per irrigation and increased flexibility in agricultural enterprises. The Rural Water Commission, in commenting on the Barr Creek Catchment Study, stated that with 75% of the catchment landformed, the impact of salinity of Barr Creek on the Murray River should be reduced.

The costs of landforming vary from about \$1000 to \$1800/ha depending upon the slope required. These costs include survey and design work, earthworks, grading and pasture re-establishment.

At present, lasergrading is being widely adopted in the Goulburn Murray Irrigation District mainly for productivity and labour saving reasons.

A survey by the Rural Water Commission indicated that about 13% of the potential area suitable for border check irrigation on the Goulburn Murray Irrigation District has been laser-graded. The total financial outlay on farm layout by farmers has been reported by Mr. Mitchelmore of the Goulburn Irrigation Region Drainage Action Committee to be about \$73 million since 1979 for the Goulburn Murray Irrigation District.

### Surface Drainage

Constructed drains:-

The primary purpose of constructed regional drains is to prevent surface waterlogging and to provide some mitigation

of flood damage to property. While the costs of schemes are available, the benefits are often difficult to quantify.

The Rural Water Commission estimates the cost of constructed regional surface drains to be \$1300-1900 per drained hectare in intensively irrigated areas and \$750-1100 per drained hectare in less intensive areas.

About 60,000 ha in the Cohuna, Kerang/Koondrook areas and adjacent to the Barr Creek Catchment are drained. In the less intensively irrigated areas, only about 15% of the Pyramid Hill region has surface drainage, whilst there are no constructed drains in the Boort Area. In the Shepparton region, about 190,000 ha are served by constructed drains. This area includes most of the intensively irrigated land and includes much of the land that is now expected to have high water-tables in the next 20 years. Surface drainage has been installed in the Swan Hill area and some horticultural areas in Sunraysia. In recent years, about \$1 million has been spent per annum under the National Water Resources Programme in remodelling and extending the surface drainage system in the Shepparton Region.

Benefits from surface drainage include reductions in ponding of surface water especially after heavy rain. The removal of this water will assist in reducing accessions to the groundwater in wet years and may reduce requirements for mosquito control. Assessments of the value of constructed drainage have not included the associated effects of groundwater reduction and timeliness of farm operations. These benefits rely on the improvement in on-farm layout being co-ordinated and occurring with regional surface drainage. However, as indicated in Gutteridge, Haskins and Davey (1983), disbenefits of deep constructed drains may include increased contamination from nutrient and pesticide runoff from agricultural land, interception of groundwater which may be highly saline and contribute to stream salinity and the possible destruction of natural wetlands.

### Natural drainage:-

Irrigation areas which lack constructed drains can have an improvement in surface drainage by achieving better flow in natural drainage lines or by the provision of grassed waterways in natural depressions.

Large areas in the Rodney, Tongala, Kerang and Pyramid Hill Irrigation regions rely on natural drainage lines to remove excess water. Costs of improving the flow in natural drainage lines under high rainfall conditions are of the order \$60 per km or \$110 per hectare served, according to Mr. C. Spowart, who represented the Kerang Irrigation Region Salinity Action Committee. These costs are about 10-15% of the total cost of a fully constructed deep drain system.

Natural depressions can be formally declared natural drainage courses under the Land Drainage Act which ensures that obstructions to flow are removed. Drainage lines such as in the Nine Mile and Calivil Creek have trunk drains constructed on them and other creeks are maintained by legally constituted Improvement Trusts. The improvements of natural depressions will facilitate the removal of surplus rain runoff, although not to the same extent as a fully constructed system, and assist in reducing groundwater accessions.

### On farm drainage:-

The collection, storage and reuse of on farm runoff from irrigation and rain is another component of surface drainage. Maintenance of on-farm drains is often inadequate, even re-layout, resulting in waterlogged paddocks and surplus water lying in natural depressions or roadsides until it percolates to the groundwater or evaporates. Collection and reuse of drainage water is not a common practice although the Department of Agriculture indicated that the practice was increasing especially among dairy farmers. A range of re-

cycling and water harvesting designs exist. The cost of water from farm dams is between \$20 to \$60/ML depending upon the design of the dam and the frequency with which it is filled. Costs to the individual varies but in the Tragowel Plains costs could be of the order \$40,000-60,000 per farm compared to \$450,000 per farm for deep constructed regional drainage (Dwyer Leslie, 1984).

### Improved Irrigation Water Distribution

#### Channel lining

The lining or piping of the entire channel system will reduce seepage and improve water efficiency on permeable soils such as in the Tresco Irrigation District and parts of Sunraysia. The Rural Water Commission has estimated the costs of lining the main channels in irrigation areas as \$100,000 to \$200,000 per km giving a total cost for all channels in the Goulburn Murray Irrigation District of \$1050 million. The lining of all the irrigation channels in the irrigation district is unlikely to be cost effective in affecting the watertable as only about 10-15% of accessions originate from this source. However, the identification of areas of high channel seepage should be located and these treated. The Committee has not been satisfied that adequate attention has been given by the Water Commission to identifying the most cost effective techniques for this purpose.

#### Water Application

Improvements in irrigation systems on farms enable better control over the amounts of water applied and its placement, and can potentially reduce groundwater accessions in permeable soils. Changes should also reduce the effect of foliar damage to horticultural plants and improve water use efficiency. Specific techniques include the use of undertree sprays, micro irrigation and better construction and

maintenance of on-farm channels. However, capital costs of \$2000-\$4000/ha discourage the adoption of reticulated forms of irrigation.

Upgrading on-farm channels for flood irrigation would improve water use efficiency and reduce labour. Changes from flood irrigation to reticulated forms of irrigation and from overhead sprays to undertree sprays is occurring in the Sunraysia region because of benefits in horticultural production. The Committee noted with interest the research into irrigation techniques being conducted at the Loxton Research Centre in South Australia.

### Sub Surface Drainage

#### Groundwater pumping

Groundwater pumping is aimed at reversing the imbalance of the existing groundwater regime where the recharge is in excess of the discharge capability of the aquifer. A single bore or a "nest" of bores (tubewells) pump groundwater from the aquifer to the surface for disposal. The removal of water from the aquifer allows downward drainage of water and so the watertable falls. This is a direct method of managing the watertable on either a local or regional scale.

Benefits of groundwater pumping include the direct control over the watertable heights and so controlled discharge of groundwater. Secondary benefits are the provision of supplementary water where the pumped water is of satisfactory quality, reduced waterlogging, rapid response of watertable heights and minimal interference to current agricultural practices.

Groundwater pumping can be utilized in irrigation areas by individual landholders or be undertaken by Government authorities. However, the effectiveness depends upon the

characteristics of the aquifers from which water is pumped, the inter-relationship with other aquifers and feasibility of accommodating the pumped water.

In the Shepparton region, costs and benefits to individual farmers are more attractive as water can be used for irrigation. The Rural Water Commission in commenting on the Shepparton Phase A Project indicated that about 3000 ha of horticultural land and 11300 ha of pasture land were protected from high watertables. The Department of Agriculture in evidence to the Committee stated that private groundwater pumping of moderately saline water in the Shepparton Region with direct on-farm use provided productive use of groundwater and lowering of the watertable on other areas of the farm at minimum cost to the public. However, Dr. Wildes of the Department of Agriculture noted that irrigation with saline groundwater may be constrained by soil problems and by the long term effects on the quality of water in the aquifer.

A joint project at Tongala by the Rural Water Commission and Department of Agriculture monitoring 20 properties over an area of 610 ha is investigating the long term feasibility of private groundwater pumping with on-farm reuse. At present, in the Shepparton region, there are in excess of 1000 privately operated pumps with which about 124,000 ML is being pumped annually. This is estimated to be about 30% of the total regional accessions.

Groundwater pumping is also technically feasible in the Kerang region, but the high salinity of the groundwater makes on farm reuse impossible and so all pumped effluent would have to be disposed elsewhere. One scheme presented by Mr. A. Coad of the Murray Valley League advocates groundwater pumping from the Mead ridge and disposing on an evaporation basin. Mr. Coad did not present any costs, but stated that this scheme could reduce the salt load of the Barr Creek, so enabling the Kerang Lake system to be flushed.

## Tile drainage

In areas with suitably permeable soils, tile pipes or slotted plastic pipes can be installed at depths below natural surface, normally two metres and spaced at intervals that maintain the watertables at sufficient depth to prevent salinization and waterlogging in the root zone. Tile drainage is a proven technique in the horticultural areas of the Mallee and Sunraysia and where heavy sub soils prevent through drainage to aquifers. Capital costs of the order \$1500-3000/ha, depending upon soil and crop to be protected, restrict use to high value crops. Evidence suggests that the piped subsurface drainage is technically feasible in the Kerang region, but would generate saline wastewater for disposal, and is only marginally economic at present. In areas of intensively irrigated areas of the Campaspe and Shepparton regions, tile drainage may be economic but no studies have been conducted.

## Transfer of Water Entitlements

The reallocation of irrigation water can take several forms including the partial or total removal of water rights from a farm or locality in areas that contribute disproportionately to the groundwater, and the retirement of all or a large part of an irrigation region. The effectiveness of reducing the water rights to an individual property will depend upon the characteristics of agricultural land use. However, this could result in aggravated salinization of land due to inadequate leaching of salt from the soil. A reduction in the quantity of irrigation water delivered may be justified in cases where irrigation on higher more permeable soils can be positively identified as contributing to waterlogging and salinization in areas of lower topography. Partial reallocation of water may have the additional benefits that water can be utilized more efficiently for agricultural production in other areas. Existing constraints on partial reallocation of water include legislative constraints on the transfer of water entitlements and lack of data on high recharge areas.

The total phasing out of irrigation from regions in Northern Victoria as a means of addressing the salinity problems is not justified. There is a major economic and social infrastructure dependent on irrigation. Furthermore, even in the absence of irrigation, regional aquifers will continue to discharge to the Kerang and Shepparton regions and mobilise salt. (The transfer of water entitlement is discussed in detail in the Committee's Report to Parliament on Water Allocations in Northern Victoria.)

## 7.4 PROTECTION OF STREAM QUALITY

### 7.4.1 **Reduce Surface Inflow**

The reduction of the volumes of surface runoff of either fresh water or saline effluent can have a substantial effect on the salt load of streams. In evidence presented by the Rural Water Commission, in discussing the Barr Creek, on-farm recycling was shown to have a positive beneficial effect on the salt load contributed to the River Murray. Diversions from constructed drains also showed a positive benefit. However, the two are often incompatible in that, with a high degree of on-farm recycling, drainage diversions could be too saline for diversion. On-farm recycling of fresher water is preferred.

In Victoria, Barr Creek is the only stream with interception works. Saline water is pumped from the downstream end of Barr Creek to an evaporation basin at Lake Tutchewop to the west. Under present operating rules, the scheme prevents 30,000 tonnes of salt per year entering the River Murray. Benefits of the scheme are derived by lower salinity levels in the River Murray downstream of the Loddon River confluence.

### 7.4.2 **Reduce Groundwater Inflow**

Reduction of groundwater inflow into streams in both dryland and irrigated areas would occur by lowering the watertables using

techniques discussed earlier. In the Sunraysia area, groundwater pumping is used to prevent groundwater inflow into the River Murray in the Mildura-Merbein area. This effluent is disposed of in adjacent evaporation basins.

### 7.4.3 Regulations of River Flows

Volumes of fresh water from reservoirs can be released to rivers at appropriate times in order to dilute incoming flows of saline water. Effectiveness of the technique depends upon the reliability with which the fresh and saline flows can be synchronized and may necessitate the use of off-stream intermediate storages for saline water. This technique aims at diluting stream flows to maintain stream salinities at appropriate levels for utilization at particular points along the length of the stream. This is only possible to do under controlled conditions of both saline and fresh water inflows.

Major constraints to implementation are the physical capacity of streams to accommodate the volumes of the diluted flow, suitable release of saline flows to coincide with periods of high flow, storage capacity, and use of water in periods of low supply. Direct costs of the technique include the opportunity cost of the fresh water used in the dilution flows and the costs of regulating the flow and providing off-stream storage. These may be offset not only by a reduction in the economic costs of salinity but also by the provision of additional water for wetland and forest watering and general improvement in the river environment.

Currently, the technique is used to control salinity downstream of Swan Hill by combining regulated flows at the Torrumbarry Weir with controlled outfalls from Barr Creek. Similar techniques are used by the Geelong Water Board to maintain a water quality suitable for domestic use at the She Oaks off-take point on the Barwon River. In this case, the groundwater inflow is not controlled. In a study of the Barwon River, the Geelong Water Board indicated that provision of storages for fresh water in the upper Barwon in the range 2,000 -6000 ML had capital costs of the order \$3 million to \$6 million in 1979.

The possible utilization of river regulations to provide dilution flows in the Murray River is discussed in Section 8.3.5 of this Report.

## **7.5 DISPOSAL OF SALINE WASTE**

### **7.5.1 Desalination**

Saline effluent that results from the foregoing techniques can be treated by various means in order to separate the dissolved salts from the water. The applicability of the processes such as reverse osmosis, ion exchange and distillation, depends upon the salinity of the "feedwater", required output of fresh water and the relative costs of operation and market value of fresh water. However, by the very nature of the process, desalination plants produce two products, fresh water and "brine" waste which still requires disposal. Rural Water Commission estimates of unit costs of water produced range from \$550 per ML for the groundwater in the Shepparton region, to about \$8000 per ML for high salinity Kerang groundwater. Obviously costs of producing low salinity water in the Murray Valley far exceeds the value of water in the river and is in excess of the costs of alternate mitigation techniques.

### **7.5.2 Solar Ponds**

Solar ponds are shallow ponds with a uniform salinity concentration gradient that increases to a brine at depth. The density of the different layers prevents convection so that heat from the sun can be trapped in the bottom layer of brine. This heat can be converted into energy for power generation, desalination, or heating. Only small experimental ponds are being used at present, and Dr. Akbarzadeh of the Solar Energy Council indicated that further developmental studies are necessary. However, the potential of solar ponds to provide energy in isolated areas deserves further investigation.

### **7.5.3 Use of Saline Water**

The need to dispose of saline surface drainage or pumped saline groundwater may be partially offset by using the water to supplement

the normal supply of fresh irrigation water. The technique is effective in reducing the inflow of saline water to streams but the long term effect on the groundwater is uncertain in regards both salinity and accessions. The use of saline water limits the choice of crops and can influence accessions to the watertable since a higher leaching fraction is required. In the short term, benefits are associated with the use of more water, and the availability of fresh water for other purposes. At present the cost of re-used water is approximately three times that of "Sales" water obtained from channels.

#### 7.5.4 Evaporation Basins

Saline waste water can be concentrated by solar evaporation in natural depressions or constructed basins. The scale of the basins can range from sizes that could be accommodated in less intensively irrigated farms to larger scale basins which could accommodate saline wastes from a variety of sources within the region. Use of natural basins for evaporation depends upon proximity to the source of effluent, capacity and depth which determine life span, consequences on the natural environment, and susceptibility to flooding.

Natural salt lakes in the Sunraysia area, and in the Eastern Mallee are presently used for disposal. The further use of natural depressions has been condemned by the Victorian Field and Game Association and many landholders around the Mineral Reserves Basin and Lake Tyrell.

Sites for constructed basins require careful investigation and design so as in to maximize evaporation but minimize the effect on underlying groundwater and surrounding areas. Several proposals have been investigated for large scale evaporation basins in the Kerang, Campaspe and Numurkah areas, by the Rural Water Commission. Direct costs of basins are associated with the purchase of land, construction of the basin and reticulation system, and losses of agricultural production in the area used. In most cases, the cost of the reticulation system is far in excess of the construction of the

basin itself. When natural depressions are used as evaporation basins indirect costs can include destruction of wildlife habitat.

Without careful design and management, evaporation basins, whether constructed or not, can suffer from leakage, release of odours, and become breeding grounds for mosquitos.

Major impediments to the further use of evaporation basins for disposal of saline wastes is public concern for possible detrimental side effects and the perception that they only transfer the problem from one area to another. In addition, evaporation basins have a finite life unless the salt is harvested from them. However, as Mr. W. Cook from Cheetham Salt Pty Ltd indicated to the Committee, the cost of transporting the salt to a refinery can be prohibitive since the domestic price for salt is only \$10 per tonne.

Experimental on-farm evaporation basins occur in both the Shepparton and Kerang Regions. For the Girgarre project, a 30 ha evaporative area has been costed at about \$220,000, which suggests that a cost of about \$8000 per evaporative hectare can be used as an indicator for on-farm basins.

The use of evaporation basins in Northern Victoria is further discussed in Chapter Eight.

#### **7.5.5 Pipeline or Channel to Sea**

An option advanced by the Pipe the Salt Committee and others is that saline wastewater can be conveyed to the sea by a pipeline or channel. Advantages of a pipeline are that salt is removed from the area and terrestrial disposal options are not required. Pipeline manufacturers such as Humes Limited and James Hardie Pty. Ltd., assured the Committee that the technology was available to ensure a fail safe system of pumping and pipeline security.

The direct cost of a pipeline depends upon the quantity of saline wastes to be pumped and the route to be taken. The Hon. N.B. Reid,

M.L.C. submitted to the Committee a proposal for a pipeline to carry 55 ML/day from Lake Tutchewop to Port Phillip Bay, removing 150,000 tonnes salt per annum. Dwyer Leslie (1984), estimated the capital cost to be \$175 million and annual operating costs including depreciation to be about \$3.5 million. The estimated cost can be compared with those of other schemes. The Water Commission prepared estimates for a range of schemes to take saline water from Lake Tutchewop to the coast. The capital costs were \$117 million - \$302 million, depending on the capacity and route of the pipe. Other studies are reviewed in Gutteridge, Haskins and Davey (1983). To these capital and operating costs must be added the cost of servicing the loan for the capital works.

An assessment of a pipeline scheme must also take into account the following factors:

- . the provision of a network of feeder lines by which the saline wastes are collected,
- . the need to pond and concentrate the saline water, probably in evaporation basins, before it is pumped through the pipeline,
- . the limited lifetime of a pipe,
- . the selection of a suitable disposal point.

Disposal to Port Phillip Bay would probably be prohibited by the nutrient loads contained in the wastes. An ocean outfall would cost at least an additional \$25 million (Dwyer Leslie 1984).

Because of the likely availability of less costly means of disposing of the wastes in the short term, as noted in the next chapter, the Committee believes that a pipeline is unlikely to be warranted within the next decade. It remains a possible solution beyond that period and further investigation is justified.

7.6.1 Conclusions

- (i) Salinity control is currently directed at ameliorating the consequences of salinity rather than at the causes. As a result, the problems continue to grow.
- (ii) The principal causes of salinity problems, that are associated with rising watertables, can only be addressed by treating the preferential recharge zone of the groundwater system or removing water from the aquifers.
- (iii) Treatment of a recharge zone requires selecting the most appropriate combination of techniques for the particular location. It also requires co-ordinating implementation throughout the recharge zone.
- (iv) Of particular importance is the control over any changes in the use of land in the recharge zone which may result in greater accessions to the sensitive groundwater systems. Such practices may include:
  - . clearing of deep-rooted vegetation
  - . excessive fallowing
  - . excessive application of irrigation water
  - . construction of unsealed water storages or channels
  - . inadequate drainage of surface water.
- (v) The response of areas, that are already salt affected, to the treatment of the recharge zones will depend on the extent of treatment and on the nature and extent of the affected groundwater system. For localised systems, the benefits of treatment may be observed within several years. For regional systems, the response time may be several decades or even centuries. Thus, even with intensive implementation of techniques for controlling recharge of groundwater, many of

the salinity problems will continue to grow before they begin to abate.

(vi) The effectiveness and economic viability of many of the techniques are still uncertain. Preference must therefore be given to those techniques for which there are associated benefits besides salinity control. In dryland agriculture these may include:

- . tree planting, particularly in areas of low agricultural productivity,
- . replacement of some shallow-rooted plants with deeper rooted species.

In irrigated regions they may include:

- . various methods for water conservation,
- . re-layout of land to facilitate surface drainage and water application.

(vii) Other techniques which should be available for future control of salinity, as appropriate, include:

- . sealing of water storages and conduits
- . groundwater pumping and tile drainage
- . surface drainage by constructed or natural drainage lines
- . re-allocation of irrigation water away from sensitive recharge zones.

(viii) The principal impediments to the greater application of the techniques of recharge control on farms include:

- . lack of awareness and concern about salting
- . lack of understanding of the mechanisms of soil salting and related control measures

- . financial constraints
  - . apparent inequities associated with the separation in distance and time between the cause and effect.
- (ix) The control of salinity would therefore be facilitated by providing for the following in sensitive recharge areas:
- . extended research and education programs
  - . capacity to constrain the clearing of vegetation
  - . encouragement of preferred farming practices
  - . encouragement of tree planting
  - . encouragement of relayout of irrigated land
  - . transfer of entitlements for irrigation water.
- (x) The potential for salinity problems to increase in the future justifies a major expansion in the program of recharge control and a transition from the current research phase to a broad-scale implementation phase. However, because of the substantial uncertainties associated with many of the techniques, intensively monitored trial schemes must often precede the development of full scale programs.
- (xi) Even in the event of widespread recharge control, there will remain the need to dispose of saline wastes. These will result from the interception of saline groundwater or surface drainage. The three possible forms of disposal are by evaporation on land, discharge to rivers during periods of regulated flow, or transport to the sea.

### 7.6.2 Recommendations

- R1. Salinity control programs should place greater emphasis on addressing the causes of salinity problems by controlling recharge of groundwater systems.
- R2. Relevant government agencies should develop the capacity for routine determination of preferential recharge zones as part of land capability surveys.

- R3. Codes of preferred farming practices appropriate to sensitive recharge zones in dryland and irrigated regions should be developed as guidelines for land users and managers.
- R4. As part of the current Inquiry into the Timber Industry, the opportunity for encouraging commercial plantations in sensitive recharge areas should be investigated.
- R5. The capacity to transfer water entitlements from sensitive recharge zones in irrigation areas should be introduced.

## CHAPTER EIGHT

### REGIONAL STRATEGIES

#### 8.1 INTRODUCTION

Regional strategies for salinity control require the application of appropriate combinations of the salinity control technique described in Chapter Seven. The selection of the techniques must take into account the characteristics of the region and the desired objectives.

The Committee has given consideration to the forms that such regional strategies might take. The purpose has not been to prescribe detailed programs of salinity control for the future. Rather, the Committee has endeavoured to obtain an indication of the factors which will influence its deliberations on the future financial and administrative arrangements for salinity control. However, in so doing, the Committee has sought to provide a basis for the detailed development of salinity control programs in the future.

The emphasis of the Committee's work has been on Northern Victoria where the potential influence of land and water management on the Murray Basin drainage system is a unifying factor. Consideration has also been given to the form of regional strategies in areas of dryland agriculture outside the Murray Basin.

In developing its views on regional strategies, the Committee has supplemented the information provided in submissions by commissioning a Strategic Study of Salinity Control in Northern Victoria (Dwyer Leslie, 1984).

## 8.2 GENERAL APPROACH - DRYLAND AGRICULTURE

The Department of Conservation Forests and Lands described to the Committee the three stages involved in selecting appropriate salinity control strategies for specific locations in dryland agricultural areas:

- (i) The land is characterised with respect to the amount of recharge that is occurring at present and its distribution within the landscape. Components which have a high rate of intake are particularly important. The capability of the land for agricultural and forestry purposes is assessed.
- (ii) For each component, information on the relationship between farm income and the reduction in recharge for a range of strategies is gathered. From this the most economically attractive strategy for reducing recharge on a catchment or farm basis is identified.
- (iii) The most appropriate "package" for the individual farm as well as for the whole catchment is developed. This must take account of the preference of individual farmers, the present use and management of land and ancillary benefits such as those associated with tree growing.

This approach is applied to locations within the following three treatment provinces, identified by the Soil Conservation Authority, and shown in Figure 11:

Treatment Province A: In this province moderately sharp groundwater divides coincide with surface divides, and each sub-catchment, measured in tens to hundreds of hectares, operates as an independent hydrological system and may be treated as such for practical purposes. This province is concentrated in a strip lying across the boundary between the Central Victorian Uplands and the surrounding plains, in the Dundas Tableland, and in the coastal plain which lies between the Uplands and the western Victorian coast. It contains some of the largest individual salted areas in Victoria (Kamarooka, Sheep Pen Creek), some of the most intensive concentrations of salted valleys (Dundas Tableland) and, except for parts of the Mallee, the highest concentrations of salts in both soil and water. Furthermore, in the areas at the edge of the Uplands, there is

considerable potential for the spread of soil salinity, especially along the Uplands - Plains junction. Streams traversing Province A are considerably more saline than elsewhere, this being related directly to the high salt store in the clays there.

Treatment of Province A problems is technically the simplest. This is because of the relatively small quantities of water involved and the limited size of treatment units required. However, the province covers several landuse systems, principally grazing and cropping, and salinity control recommendations would require quite different approaches in each case. Essentially, deep-rooted, highly transpiring perennials in the appropriate parts of the recharge area must be introduced into the grazing system as a permanent component, and into the cropping system as a major part of the rotation.

Treatment Province B: In this case there can be relatively free interchange of subsurface water between catchments, and the regional groundwater system over-rides the local system. This means that there are no significant groundwater divides between small catchments and hydrological control must be exerted simultaneously over quite large areas, measured in hundreds of square kilometres or even more. This province is most extensively developed in the Central Uplands.

Again, the basic element in treatment is the greater use of deep-rooted highly-transpiring perennial plants in the appropriate part of the recharge areas. The practical difficulties of treatment are that recharge must be reduced over very large areas. Also these areas encompass different landuse systems which must be drastically modified if significant effects on salinity are to be achieved.

Treatment Province C: This is a difficult province to evaluate in practical terms. In some places, there is a relatively straight forward combination of Province A and B conditions, part of the solution being local, part regional. However, the relationship between the two is not fully understood in all places.

## 8.3 MURRAY BASIN CATCHMENTS (NORTHERN VICTORIA)

### 8.3.1 Extent of Region

The region incorporates:

- . the irrigation areas of Sunraysia
- . the irrigated areas of Kerang
- . the irrigated areas of Shepparton
- . the dryland plains areas, generally to the south of the irrigated areas of Kerang and Shepparton
- . the upland areas on the northern slopes of the Great Divide.

### 8.3.2 Strategic Objectives

The assessment of possible strategies has taken into account the following factors:

- . provision for both short-term and long-term benefits
- . retention of options for future control measures as further information becomes available
- . recognition of environmental values, particularly of natural wetlands
- . establishment of sustainable land uses
- . protection of River Murray water quality.

### 8.3.3 Study Method

The appropriate strategy must protect agricultural productivity and environmental quality. However, the present knowledge of salinity is inadequate to allow this balance to be fully assessed. The approach of the Team which undertook the Strategic Study was to assess the consequences of not intervening to control salinity and then examining the combination of salinity control techniques which might be justifiably implemented, given the cost of implementation. The distribution of saline wastes resulting from the land treatment practices was assessed and possible short and long term strategies for the disposal of that waste evaluated.

### 8.3.4 Outcome

The strategy recommended by the Study Team involves a staged approach to salinity control, each stage providing both a partial solution and further data on which to base an assessment of the next stage. The proposed strategy of the Study Team is outlined in Appendix 8.

The recommendations of the Study Team were as follows:

- **Dryland Areas:**

*Continue with the 'best-bet' approach recently adopted at Burke's Flat. In the next 10 years up to 65 such areas covering up to 50,000 ha may be located and treated. Expansion of monitoring of groundwater accessions plus research into control/reduction techniques through agricultural systems and reforestation is also necessary. The estimated total public sector cost would be \$7-12 million.*

- **On-farm Measures in Irrigation Areas:**

*In most cases the major reasons for farmers undertaking farm improvements are the productivity gains and/or reduced costs. However, where such actions also have a positive community benefit (minimising accessions to the groundwater for example) it would be advantageous for the community, through the Government, to support and promote such measures. The measures recommended for support include:*

- *Landforming and laser grading including on-farm water harvesting.*
- *Micro-irrigation of high value horticultural crops.*
- *Private groundwater pumping and reuse.*

### **Surface Drainage:**

Surface drainage increases productivity by reducing waterlogging but also has an effect upon accessions to the watertable.

Problems with fully constructed surface drainage in high watertable areas are that they are very expensive and also increase saline groundwater flows into the river systems. Programmes to improve the natural drainage lines produce many of the benefits of the fully constructed systems at very much lower costs and with lower salt load generation. A program for improvement of natural drainage lines in both the Kerang and Shepparton regions is therefore recommended for completion within the next 10 years at an estimated cost of \$12 million. Subject to economic feasibility the extension of the main drainage system in the intensively developed areas in the Shepparton region at a cost of \$6.5 million is also recommended.

### **Sub-surface Drainage:**

On-farm measures and surface drainage play an important part in reducing accessions to the groundwater. However, sub-surface drainage (tile drainage and pumping from shallow aquifers) will still be necessary if watertables are to be lowered to safe levels. The key to such sub-surface drainage is the ability to effectively dispose of the resulting saline effluent, which is both difficult (technically and in a community sense) and expensive.

Not enough is known about the disposal options to be able to formulate a firm long term strategy. Therefore the sub-surface drainage strategy has concentrated upon the next ten years and the effective testing of disposal methods.

The recommended sub-surface drainage strategy therefore includes the following major elements, all to be implemented in the next 10 years.

- *In the Kerang region the construction of a groundwater pumping scheme incorporating local disposal is recommended. The scheme should protect 1000 ha to 2000 ha and could be expected to cost \$2 million to \$4 million.*
  
- *In the Shepparton region the construction of several schemes is recommended. Local disposal and agricultural concentration of effluents are to be tested in these schemes. The total area protected will be about 22,000 ha and the cost is estimated to be \$14.6 million. Some external disposal of saline effluent will be required.*

**Disposal:**

*The disposal strategy assumes that the proposed Barr Creek Management Program will result in effective control of the Barr Creek salt loads and hence will obviate the need to implement such control using Lake Tyrell as an evaporation basin.*

*In the short term, and in the absence of fully developed alternative disposal strategies, a strategy has been adopted of disposal via the River Murray with appropriate offsetting dilution flows and each disposal allocation to be specific to a sub-surface drainage schemes.*

*The sub-surface drainage schemes which have been recommended incorporate specific alternative disposal strategies. Continued intensive studies and investigation aimed at providing alternatives to dilution are also recommended. These alternatives may include combinations of: reuse, local evaporation basins, pipelines to the sea, trade-offs with disposal works in other regions, and local treatment.*

. **Summary of Financial Implications of Foregoing Measures:**

The following is a summary of the public sector expenditures (in addition to existing programmes) which have been recommended by the Study Team. Complementary private sector expenditures are not shown. (Values are in million dollars).

	<u>Short Term</u> (Nominal 10 years)	<u>Long Term</u> (Nominal 50 years)
<b>DRYLAND AREAS</b>	7 to 12	Not specified
<b>SUPPORT FOR ON-FARM MEASURES</b>		
- Landforming and Laser Grading	Up to 30	Nil
- On-farm water harvesting	Up to 5	Nil
- Micro-irrigation	Up to 3	Nil
- Private groundwater pumping and reuse	Up to 2	Nil
<b>SURFACE DRAINAGE</b>		
Kerang	2	Nil
Shepparton	16	Nil
<b>SUB-SURFACE DRAINAGE (INCL. DISPOSAL)</b>		
Kerang	Up to 4	Not specified
Shepparton	15	40
<b>CHANNEL SEEPAGE CONTROL</b>	Not specified	Not specified
<b>DISPOSAL OF EFFLUENTS</b>		
Kerang	Included	Not specified
Shepparton	Included	Up to 200
<b>WETLANDS</b>	<u>Not specified</u>	<u>Not specified</u>
<b>TOTALS</b>	<b>70 to 90</b>	<b>200 to 400</b>

. **Wetland Management:**

- Give weight to need to provide water replenishment to selected wetlands.
- No further wetlands should be used as evaporation basins for disposal of wastes from agricultural areas. Exceptions to this may be considered for the natural

highly saline environments of Lakes Tyrell and Wahpool.

- *Lake Tutchewop should be restored to more acceptable salinity levels (less than 20,000 EC) by outletting to other acceptable disposal environments such as evaporation basins.*
- *The use of controlled discharge of salt to the River Murray under appropriate conditions should be pursued further for salt disposal and wetland management at Lake Tutchewop and for wetland management in other water bodies in the Kerang region. (This action would be aided by the greater availability of replenishment water for wetlands).*
- *A net improvement in overall habitat values should be a specific aim in future management plans for water flows through the Kerang wetlands.*
- *In the resolution of conflict between farm irrigation and habitat values in the Kerang wetlands (e.g. as at Second Marsh), there be a preparedness to require the cessation of irrigation and compensate affected farmers accordingly.*
- *Dryland salinity be appropriately addressed in order to protect terminal wetlands.*

### **8.3.5 River Dilution**

The use of dilution flows for water quality management is dealt with in some detail in the Committee's Fourth Report to Parliament, on Water Allocations in Northern Victoria.

Results from the River Murray Water Quality Management Study (1984), commissioned by the River Murray Commission, indicate that dilution of the likely salt loads can be achieved with the relatively low diversion of water resources although there will be

some penalty to irrigators. While the penalty to irrigation would fall unevenly, being more severe in drought years, the average penalties to irrigators in the Goulburn Murray Irrigation District would be about 1% and just less than 2% for the Shepparton Phase B Hybrid Scheme and the Shepparton long term case respectively. However, in drought years the penalty would rise significantly. For the Shepparton Phase B Hybrid Scheme, which requires an additional 1,000 ML/day dilution flow at Euston, the annual penalty during drought periods is likely to be between 30,000 to 70,000 megalitres which results in a penalty of between 2% and 5% for irrigators in the Goulburn Murray Irrigation District. In the worst long-term case, which requires a dilution flow of 1500 ML/day at Euston, the shortfall to Victoria could be up to 900,000 megalitres during periods of extreme drought such as the year 1944-45 of the 1939-45 drought.

In economic terms, the trade off between salinity improvements in the lower river and the loss of water resources for upstream irrigators presently favours the salinity improvements. For example, the River Murray Commission indicates that a 15 EC reduction in salinity at Morgan would give immediate urban and industrial benefits in South Australia of \$820,000 per annum, whilst the annual average cost to irrigation would be \$624,000 (assuming water having a net marginal cost of \$48 per ML) - the net benefits of the additional dilution flow being \$196,000 per annum.

Therefore, dilution flows are an attractive means of managing saline wastes in the short term due to their costs and flexibility but, in the long term, may not be able to be sustained without a significant penalty to other water users, particularly irrigators.

### **8.3.6 Specific Projects**

During the course of the Inquiry, the Committee has been provided with descriptions of, and opinions on, a number of specific projects in Northern Victoria. They are described below and commented upon, in the context of an overall strategy, in the subsequent section.

## Shepparton Hybrid Phase B Scheme

The Shepparton groundwater control program is an expansion of the Phase A scheme now protecting the intensively irrigated horticultural areas. The Phase B plan originally proposed by the Rural Water Commission was that 435 Commission owned and operated groundwater pumps would provide protection for 125,000 ha of the more intensively irrigated pasture area against waterlogging and salinisation. Because of the proliferation of private groundwater pumping, primarily to supplement irrigation supplies, the original scheme has been modified and renamed the Hybrid Phase B Scheme. This modified scheme would require 250 pumps operated by the Rural Water Commission and would dispose of saline water that is too high for reuse on-farm. Another 1200 private pumps would be required. This scheme with sufficient outflow can be expected to contribute a controlled outflow of about 100,000 tonnes salt per year within 20 years, reaching an equilibrium amount of about 50,000 tonnes salt per year after 20-40 years. The detailed design of the Hybrid Phase B scheme cannot be predicted accurately because of uncertainties of a number of issues. These are being investigated in pilot schemes.

## Girgarre Pilot Project

This study, proposed by the Rural Water Commission, aims to provide immediate relief to affected properties in the Girgarre locality of the Shepparton Region. It will also provide an opportunity to more accurately assess parameters which will determine the effectiveness and benefits of groundwater control in a larger groundwater control project. Seven alternatives involving groundwater pumping and a range of disposal options were considered. One option of landforming and layout was deleted from consideration because of perceived major gaps in information. Of the groundwater options, four alternatives were discarded because of economics and one because of the impact of outfalling groundwater of 9,000 mg/L on the Deakin Drain Diverters. The favoured option would utilise two groundwater pumps (2,400 mg/L and 3,600 mg/L respectively) which would outfall

to the Deakin Drain, while the third (9,000 mg/L) would discharge to a 30 ha evaporation basin constructed on-farm. The average salinity of Deakin Drain was expected to rise to about 600 mg/L which is considered by the Department of Agriculture to be the highest salinity at which water can be safely used for irrigation.

As a result of the diversions, some 47% of the salt outfallen from these two pumps will be retained within the region. The remaining 53% or 950 tonnes per annum would flow to the River Murray, causing an increase in the median salinity at Morgan (South Australia) of 0.13 mg/L (0.22 EC).

### Barr Creek Catchment Study

Barr Creek is the major point source contributor of salinity to the River Murray and is subject to diversion to evaporation basins in Lake Tutchewop. A group of consultants employed by the Rural Water Commission undertook a study to describe the flow and salt load in Barr Creek and predict the effect of on-farm measures on the salt load of Barr Creek. The consultants were also to examine other 'public scale' schemes which may be feasible and prepare costs and benefits. A mathematical model of flows and salt loads was developed using records of monitoring of past years.

Using derived values for water balances, different types of soil, land use and irrigation, the model was used to predict the effects of changed management on the salt load and flow at Capels Crossing. Predictions indicate that if 75% of the catchment were landformed or lasered to grade, then the salt load in Barr Creek would be reduced and the efficiency of diversion increased. Results also indicate that on-farm reuse of tailwater, in conjunction with landforming, can prevent an average of 50,000 tonnes of salt per year from entering the River Murray.

### Mineral Reserve Basins

The Mineral Reserve Basins Scheme is proposed to increase the evaporative capacity of the existing Barr Creek - Lake Tutchewop

Diversion Scheme. Involving three basins of 575 ha in area, the disposal capacity of Barr Creek flow and salt load could be increased by 4500 ML and 16,000 tonnes salt per year respectively. The combined Lake Tutchewop/Mineral Reserve Basins Scheme would give control over 24% of the average annual Barr Creek flow and salt load. As a terminal scheme it has an estimated life of 50 years. This scheme is presently under construction.

### Lake Charm Restoration

The Rural Water Commission has examined possible solutions to the rise in salinity of Lake Charm and the proposals have been subjected to the Environment Assessments Procedure. The scheme preferred in the Assessment by the Minister for Planning and Environment (January, 1984) provides for a reduction in salinity in Lake Charm by back flushing water through Cullens Lake and into Duck Lake (an existing salt pan), where it would evaporate. Under this Scheme, salinity levels in Lake Charm would improve from present levels of approximately 2,050 mg/L to an average of 960 mg/L (the value considered by the Rural Water Commission to allow lucerne production at 90% of that attainable). The environmental quality of Lake Charm would be improved as a consequence. The present level of salinity in Cullens Lake (averaging over 18,000 mg/L) would also be reduced to a mean value of 7,200 mg/L).

The option of releasing the water from Lake Charm to the River Murray was considered unacceptable by the Rural Water Commission due to the consequences on the water quality in the River Murray.

Objections to the preferred scheme, which were put to the Committee, were based upon the possible lack of an adequate water supply from Lake Charm, the consequences for Cullens Lake, and the effects of a flood.

### Karadoc Swamp

Natural groundwater intrusion from both sides of the River Murray makes a significant contribution of the salt load and salinity level of

the River. The Water Commission outlined a proposal for a joint New South Wales/Victoria interception scheme at Lambert Island with evaporative disposal in New South Wales. Studies are presently underway by both States.

#### Nangiloc-Colignan Drainage Scheme

Intensive horticultural development in the Nangiloc-Colignan area is being affected by high saline watertables. A comprehensive drainage disposal scheme has been proposed by the Rural Water Commission to serve 3100 ha of development. Growers would direct their tile drainage to sumps provided as part of the scheme, from where it would be transported by pipeline to Boonoonar Basin and Carwarp West Basin for evaporative disposal. Disposal to these basins would be augmented by reuse and controlled outfall to the River Murray in accordance with set conditions and other Victorian salt load out-falling. No objections to the proposal have been received by the Committee.

### 8.3.7 Conclusions and Recommendations

#### Conclusions

- (i) The potential contribution to salinity problems in the region from dryland salting in the Uplands is significant. A concerted effort to control dryland salinity in the areas is therefore warranted at an estimated additional expenditure over the next ten years of at least \$5 million.
- (ii) The protection of agricultural productivity in irrigation areas will involve an accelerated program of on-farm measures. This should include the encouragement of land layout, micro-irrigation of high value horticultural crops and, in the Shepparton region, private groundwater pumping and reuse. An expenditure by the public sector of an additional \$40 million over the next ten years is justified.

- (iii) The protection of agricultural productivity in irrigation regions also justifies further enhancement of surface drainage by, at least, improving natural drainage lines in both the Kerang and Shepparton regions at a cost of \$10 million over the next ten years. The extension of the main drainage system in the Shepparton region may also be warranted.
- (iv) Despite the foregoing measures, the control of watertable levels will require groundwater pumping. The concept of pumping in both Kerang and Shepparton regions is endorsed but priority should be given to the Shepparton Scheme. The Strategic Study has vindicated the Shepparton Hybrid Scheme in principle and emphasised its urgency.
- (v) The Strategic Study has demonstrated the lack of a long-term scheme for proper disposal of saline wastes. This water will result from the protection of agriculture and the environment. The Committee accepts the principle of a non-degradation policy for the River Murray. It also accepts the suggestion of the Study Team that river dilution may provide the best short-term strategy for release of Victoria's saline wastes.

However, this can only be acceptable if a satisfactory alternative disposal scheme is available for the longer term. The immediate development of such a scheme is therefore imperative.

- (vi) In the context of the Strategic Study, the Mineral Reserve Basins scheme could provide a useful offset for discharges to the River Murray. (Because this scheme is currently the subject of litigation, the Committee has refrained from making further comment).
- (vii) Factors which should be taken into account in establishing a long-term disposal strategy include the potential for salt harvesting. The potential requirements for disposal by neighbouring States and the need for an approach which is adaptable

to changing conditions must also be considered. The Committee notes that both disposal by a pipeline or by evaporation will require the capacity to pond the wastes. A procedure by which the community can select appropriate sites is therefore required.

- (viii) The current condition of the Kerang Lakes region is unsatisfactory. Inadequate consideration in the past of the region as an interrelated system has led to its degradation. There is a need to re-evaluate the management of the Lakes region in the light of a broad strategy for salinity control and water management in Northern Victoria.
- (ix) The Barr Creek Catchment Study has provided a useful basis on which to develop management plans for the area that are consistent with a broad regional strategy. The development of the management plans should preferably be led by the affected community itself.
- (x) The Nangiloc-Colignan scheme, which will create saline wastes, requires re-evaluation in the context of the regional strategy.
- (xi) Inadequate information on the Karadoc Swamp scheme is available to permit assessment.
- (xii) Resulting from the foregoing observations is a clear need for a more sophisticated and comprehensive approach to the management of salinity in Northern Victoria. In the past, neither the knowledge of the interactions nor the perceived magnitude of the problems has encouraged a basin-wide approach. Such reasons cannot be used as excuses in the future.

## Recommendations

- R6. The results of the Strategic Study should be used as a basis upon which to develop a long-term strategy for salinity control in Northern Victoria.
- R7. Within the next ten years expenditure of an additional \$8 million per year should be provided from the public sector for salinity control in Northern Victoria.
- R8. Priority should be given immediately to the investigation and implementation of the Shepparton Hybrid Scheme, and the Barr Creek Catchment Strategy.
- R9. The development of a long-term strategy for disposal of saline wastes should commence immediately and the results should be part of the overall strategy for waste disposal to be discussed by the River Murray Commission.
- R10. Subject to agreement within the River Murray Commission, the principal of river dilution as an important part of Victoria's strategy for disposal of saline wastes in the short term future should be adopted.
- R11. Community based development of management plans for the Barr Creek Catchment and the Kerang Lakes Region should be encouraged immediately.
- R12. Further consideration should be given by the Water Commission to opportunities for flushing Lake Charm to the River Murray during periods of surplus river flows, thereby avoiding the need to backflush to Cullens Lake.

## 8.4 OTHER REGIONS

### 8.4.1 North-Western Victoria (Mallee, Wimmera and Avoca Catchments)

Since the land is influenced by both local and regional watertable problems it has been classified by the Soil Conservation Authority as Province A and B. Alteration to agronomic practices will have to be encouraged on many individual farms to reduce dune seepage. The effects of channel seepage can be eliminated either by channel lining or piping. This is particularly attractive for the more permeable soils of the Mallee. Account should be taken of the improvements in water quality and losses to regional watertables. Alternative methods of reducing the effect of channel seepage by the use of trees or agronomic methods should be pursued.

As the lower more productive soils of the landscape are at risk from regional watertables, this may have major consequences on the agricultural productivity of the area and increase the erosion hazard. Further investigation is required to monitor watertables, and identify and assess areas that contribute to the highly saline regional watertable. As the Department of Minerals and Energy has indicated that the low hydraulic gradients in the Parilla sands preclude groundwater pumping, only agronomic and revegetation techniques can be provisionally recommended. Further investigation should include hydrogeological, re-forestation, agronomic, and economic evaluations in the immediate future before broad scale regional strategies can be implemented.

### 8.4.2 South-west Victoria (Hopkins, Glenelg, and Portland Coast Catchments)

These areas because of their hydrogeological and physiographic characteristics have been classified by the Soil Conservation Authority as Province A for salinity control. The essential feature of this province grouping is that groundwater flows are thought to be localised within surface divides of sub-catchments which may vary from tens to hundreds of hectares in size. Stream salinity is usually

high, because of the high concentrations of salt in both soil and groundwater.

Discharge zone treatment will have to occur in the short term but should occur in conjunction with the use of agronomic and revegetation techniques on recharge areas. To achieve the most appropriate combination of techniques for an individual farm as well as for the catchment as a whole, recharge areas will have to be identified and the amount of recharge occurring assessed. At present, there is only one full time research person from the Soil Conservation Authority working in the area, supplemented by the part-time involvement of the research team at Bendigo. Mr. Voigt of the Soil Conservation Authority, indicated that the basic understanding should be known by the end of 1984. Farmers in the area suggest that more research and investigation is required for agronomic practices, the densities of trees required and incorporation into management practices.

The implementation of changes will require considerable alteration to farm management practices they should be undertaken on a sub-catchment basis by individuals or small groups. The Soil Conservation Authority has proposed a 3 year budget for a Seepage Salting Control Programme in the region which would assist in treating both recharge and discharge areas. Costs of the field implementation over 3 years to the Soil Conservation Authority (Land Protection Service) would be \$310,000 for works on recharge areas, and \$33,000 for action on discharge areas. Landholders would pay another \$310,000 for recharge works and \$66,000 for discharge works. This programme would treat 3000 ha in recharge zones and 300 ha of discharge zone. The parts of the region associated with the supply of water to the Rocklands Reservoir and hence to the Wimmera Mallee Stock and Domestic System and to coastal streams should be given priority.

#### **8.4.3 Barwon Region (Barwon River and Lake Corangamite Catchments)**

In upper reaches of the Barwon River Catchment some areas are classified as Province A. The Lacustrine Plain complex of the lake

system near Colac is designated Province C. In this case there may be relatively free interchange of groundwater between catchments, such that the regional groundwater trends can influence catchments miles away. This means that hydrological control must be exerted simultaneously over quite large areas, measured in hundreds of hectares to square kilometres.

Of particular importance, is the effect that salinity is having on the harvesting of water resources both for urban use in Geelong and for rural use. Evidence presented by the Geelong Board indicated that the improvement of salinity in the Barwon River will require a co-ordinated approach by the many authorities concerned with its management, especially in respect to both water and land management.

Requirements may include changes in agricultural land management, drainage diversions from Lake Colac/Lough Calvert scheme or construction of schemes to divert saline water away or pump fresh water. Further investigation appears warranted into the feasibility of new storages, piping and the establishment of a Barwon River Catchment Authority.

#### **8.4.4 Conclusions and Recommendations**

##### Conclusions

- (i) The two principal aspects in North West Victoria that require further clarification are the desirability of converting parts of the Wimmera-Mallee Stock and Domestic channel system to a pipeline in locations with permeable soils, and the development of agronomic measures applicable on a broad scale.
- (ii) In South West Victoria, the causes and effects of salinity are localised and their management therefore depends upon co-operation between small groups of landholders.

- (iii) In the Barwon Region, the watertables are influenced by regional aquifers and hydrological control over a large area may be required, coupled with co-ordinated management of the land and water resources.

### Recommendations

- R13. Sealing or piping of the Wimmera-Mallee Stock and Domestic Supply System in regions of permeable soils should be given urgent consideration by the Rural Water Commission.
- R14. Development of land management techniques to combat salinity in the Mallee Region should be given high priority by the Land Protection Service and the Department of Agriculture.



## **PART III**

### **IMPLEMENTATION OF SALINITY CONTROL**

Part III (Chapters 9 to 15) presents the Committee's findings on the manner in which salinity control should be implemented in Victoria, the support functions that will be required, and the resources that will be necessary.



**CHAPTER NINE**  
**GUIDING PRINCIPLES FOR IMPLEMENTATION**

**9.1 INTRODUCTION**

The effective implementation of the foregoing salinity control measures requires the appropriate allocation of responsibilities and resources, availability of implementing mechanisms and provision of support functions. To guide its deliberations on these matters, the Committee has agreed upon the set of principles outlined in this chapter.

In later chapters, these principles have been used to determine the adequacy of the existing arrangements for salinity control and to propose future arrangements.

**9.2 THE PRINCIPLES**

**9.2.1 Appropriate level of response**

The extent of salinity will increase in Victoria, with the result that the importance of salinity control to Government and the community will grow and be given a higher priority. There will be pressure for this priority to be reflected in arrangements which are efficient, effective and of adequate status. The arrangements that are chosen should be appropriate to the scale and importance of the task.

**9.2.2 Durability**

The basic cause and effect relationships with salinity may take decades, even longer, to fully work out, and remedies may take an equally long time to be fully effective, particularly with dryland salinity. The arrangements for salinity control will therefore need to have long life and a capacity to evolve over time.

**9.2.3 Adaptability**

The precise form that the control of salinity will take in the future is uncertain. In particular:

- a number of control techniques remain to be properly tested and evaluated,
- there are gaps in scientific data on the mechanisms of salinity,
- forms of agriculture and other uses of the land will change in the future in response to changes in markets, technology and other factors.

There must therefore be a capacity to regularly review the performance of control techniques and the effectiveness of strategies used, and to revise the mix of techniques and approaches if required.

Furthermore, the manifestation, contributing factors and appropriate form of control may differ between regions and sub-regions. Salinity control programs must take these variations into account.

#### **9.2.4 Integration with other aspects of land and water management**

The control of salinity should not be seen in isolation but as part of bigger problems of effective management and husbandry of the land, water and associated natural resources. This includes other forms of land degradation, water pollution and threats to natural flora and fauna. A salinity control strategy should be linked with, and be part of, Victorian land and water management, including agricultural, conservation and natural resource development policies.

#### **9.2.5 Integrated task**

The arrangements for implementing salinity control will depend upon the extent to which the control is viewed as an integrated program or as a set of independent programs. In the past, the division has been made between "dryland salinity" and "irrigation salinity", and each has been accorded a separate set of causative factors, and control measures. A division might also be made in dryland agricultural areas between those regions in which small catchments may be treated individually with an expectation of success (Province A) and

those in which several catchments must be treated simultaneously (Province B). A division might also be made between the salinity problems of the soil and those of water bodies.

However, in all cases, there are common factors. Each is associated with the management of the watertable, affects primarily farmers and their land, and usually requires action by farmers to overcome the problems. Some control techniques are common to all areas. Similar types of expertise in agricultural extension, community assistance and field research are necessary. Furthermore there is a need throughout Victoria to raise the awareness of salinity as an integral part of land and water management within entire water catchments. The Committee therefore believes that policy development at State level should have the capacity to view all aspects of salinity as components of a single interdependent problem.

#### **9.2.6 Effective use of expertise and resources**

**Multi-disciplinary approach :** There are many aspects to the salinity problem. It can be viewed as an agricultural production problem, a water pollution issue, a problem of degraded land or ecological threat. Problems of this nature and complexity seldom are effectively resolved without the input and involvement of a variety of perspectives and professional approaches. There must therefore be a strong multi-disciplinary approach to the salinity control task.

**Operational responsibilities of agencies :** Individual salinity control techniques currently used, or likely to be used in the future, involve specific functions and disciplines which generally correspond to the roles, functions and expertise of a number of Government agencies. This suggests that, at an operational level, government agencies should continue to have, or be given, operational responsibilities for salinity control which correspond to their functional roles and disciplines. To do otherwise runs the risk of duplication, divided expertise and inefficiency.

Economic evaluation : The nature of salinity control is complex and financing salinity control programs will continue to be a difficult issue. The costs and benefits, and causes and effects, are distributed in a complicated manner throughout the community. This will require that there be adequate on-going capacity for economic evaluation and financial analysis to support the development of salinity control programs.

#### **9.2.7 Community Involvement**

The salinity problem is not only a land management, water pollution, environmental and agricultural problem. It is also a social and community problem which can have significant adverse social and economic impacts on individuals and communities. A salinity control strategy should have community education, consultation and involvement as a major element. This should involve all segments of the community, as well as specific interest groups.

#### **9.2.8 Capacity for Inter-Governmental Co-operation**

The salinity problem is shared by Victoria, New South Wales and South Australia. There is a clear need for joint co-operation. Victoria's arrangements for implementing salinity control will need effective capacity to handle this responsibility in respect of the other States as well as the Commonwealth Government.

#### **9.2.9 Effective co-ordination of landholders**

To overcome salinity problems by adequately reducing the recharge of the associated groundwater bodies will often require action by a number of landholders whose properties are located on the recharge zone. Isolated remedial measures at dispersed locations will not solve the problems. This applies both to irrigated and non-irrigated land. Consequently, methods of ensuring appropriate co-ordination of effort, typically between private land owners, are required. The Committee believes that, to be effective, much of the initiative for establishing and maintaining such co-ordination must come from the landholders themselves.

### 9.2.10 Appropriate Incentives

Adequate incentives must be provided to encourage private landholders to implement remedial measures to the desired extent. Since the causes and effects of salinity are often separated by time and distance, these incentives must encourage action for which otherwise there may be no obvious benefit to the landholder.

The range of incentives include:

- . the provision of information and advice through Government agencies and community organisations which may influence the landholder to change his ways,
- . financial incentives, such as easier access to lending institutions, provision of subsidies or the imposition of penalties,
- . regulation and planning ordinances.

In suggesting an appropriate mix of incentives, we note the following:

- . there must be freedom for a landholder to adopt measures appropriate to the characteristics of his land, skills and markets, and to modify the measures as further information becomes available;
- . improved understanding by a landholder and the local community of the specific causes and effects of salinity is likely, in many circumstances, to result in change;
- . causes of salinity are often associated with practices which were undertaken by former landholders in ignorance of the consequences and with the encouragement of governments;
- . stronger incentives are appropriate to discourage future changes to practices which are now known to contribute to

salinity problems, particularly if the consequences of the changes are irreversible.

As a result, the Committee favours the following forms of incentives

-

- intensive programs of extension and education, supported by adequate research and investigation, to provide landholders with comprehensive and reliable information on the mechanisms and control of salinity;
- government assistance to encourage changes to preferred farming methods;
- disincentives to discourage future changes to practises that are known to contribute to salinity problems.

The forms that these incentives may take are discussed in Chapters 11, 12 and 13.

#### **9.2.11 Balanced involvement of the private and public sector**

While concentrating its attention on the role of governments in salinity control, the Committee recognises the important contribution of the private sector. Besides the essential involvement of private landholders, salinity control will be assisted by the skills of private agricultural consultants, the manufacturers and marketers of agricultural equipment, distributors of commercial publications and the information media.

### **9.3 CONCLUSIONS**

Any arrangement for salinity control should:

- constitute an appropriate level of response,
- be durable,

- . be adaptable,
- . have the capacity to integrate salinity control with other aspects of land and water management,
- . have the capacity to view all aspects of salinity as components of a single inter-dependent problem,
- . use expertise and resources effectively,
- . have the ability to involve all segments of the community,
- . have the capacity for inter-governmental co-operation,
- . be able to co-ordinate landholders effectively,
- . provide appropriate incentives,
- . involve the private and public sector in a balanced way.

**CHAPTER TEN**  
**ORGANISATION AND MANAGEMENT**

**10.1 INTRODUCTION**

The effective control of salinity depends upon co-ordinated action by landholders, local communities and a range of government agencies. The manner in which such action is organised and managed is therefore of major importance.

In this chapter we outline the current arrangements, assess their adequacy and propose improvements. To assist the Committee in this task, a discussion paper by M. Mackay and Associates on 'The Organisation and Management of Salinity Control in Victoria' was commissioned and released for public comment.

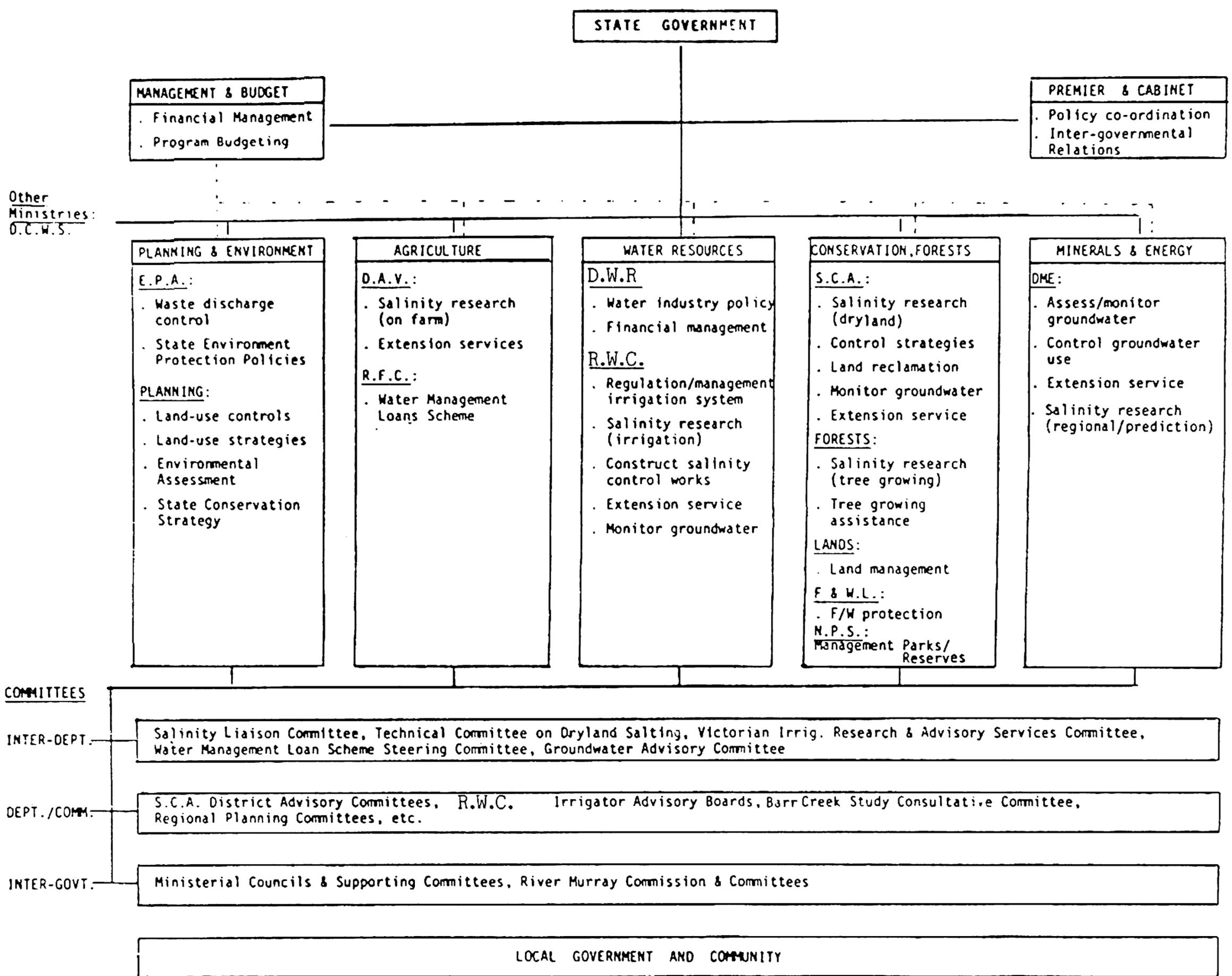
**10.2 CURRENT ARRANGEMENTS**

**10.2.1 State Government Agencies**

**General**

Salinity control activities in Victoria are currently spread across a large segment of the government's administrative structure, as shown in Figure 21 and tabulated in Appendix 9. They involve:

- five government ministries - Agriculture, Water Resources, Minerals and Energy, Conservation Forests and Lands and Planning and Environment;
- twelve separate organisational units or agencies within these ministries;
- two central agencies of government - the departments of Management and Budget, and of the Premier and Cabinet;



Other Ministries:  
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- . a number of inter-departmental 'co-ordination and liaison' committees, such as Victorian Irrigation Research Advisory Services Committee (VIRASC), Groundwater Advisory Committee, and the Technical Committee on Dryland Salting;
- . various departmental-community consultative and liaison bodies, including the Soil Conservation District Advisory Committees, and the Victorian Irrigation Research and Promotion organisation;
- . each ministry and agency's set of inter-governmental links and involvements, in particular, the River Murray Commission and the Australian Water Resources Council, with their various supporting committees and working groups.

Other government ministries and agencies also have an interest in salinity control but not at the same level. In particular, the Department of Community Welfare Services has been involved in investigation of the social impact of salinity problems in one region and the Department of Industry Commerce and Technology could become involved in situations where regional economic development is affected.

#### Legislative Responsibilities

Only two agencies, the Soil Conservation Authority and the Rural Water Commission, have specific legislative responsibilities or powers for salinity control. The functions of the Soil Conservation Authority are now part of the Land Protection Service of the Department of Conservation, Forests and Lands. It has the specific responsibility for "... prevention mitigation and reclamation of salinised soil outside irrigation districts" (Soil Conservation and Land Utilisation Act). This is in addition to more general responsibilities related to soil conservation, soil erosion, land use and development of farm water resources. Of particular interest, the Soil Conservation Authority has had the legislative authority to establish group conservation projects within communities and provide financial assistance to them.

The Rural Water Commission has powers in the Water Act, 1958 which allows it to:

- . construct, complete, operate and maintain drainage and salinity mitigation works;
- . supply water at concessional charges to improve salt affected lands;
- . purchase salt affected lands in or near the Macalister Irrigation District;
- . constitute drainage districts and to levy drainage rates to cover the cost of the drainage service; and
- . prohibit the discharge of saline water into either water courses or works of the Commission or permit such discharges where appropriate.

Other agencies do not have specific responsibilities or powers concerning salinity control but operate under more general legislative responsibilities and powers. For example, the Department of Minerals and Energy has the responsibility under the Groundwater Act for the investigation and assessment of Victoria's groundwater resources.

### Functions

Development of policies and plans: The Water Commission prepared a strategic plan for Northern Victorian Irrigation and River Murray Quality in 1975 and has acted as the lead agency in the development of plans for specific salinity control projects associated with irrigation and river quality in Northern Victoria. Other activities relevant to salinity control are the preparation of a State Water Plan by the Department of Water Resources, of State Environment Protection Policies by the Environment Protection Authority, and of the State Conservation Strategy by the Ministry for Planning and Environment.

**Research, Investigation and Monitoring:** Research into dryland salinity is undertaken principally by the Land Protection Service and into salinity of irrigation regions by the Department of Agriculture and Water Commission. The Department of Minerals and Energy is surveying the groundwater characteristics associated with both dryland and irrigation salinity and the State Forests and Lands Service is investigating the role of trees in salinity mitigation.

**Extension, Education and Assistance:** Extension services in the form of advice, information and assistance are provided by the Department of Agriculture, Land Protection Service, Rural Water Commission and to a less extent by the State Forests and Lands Service to farmers and the community in general. The Department of Minerals and Energy also provides information about groundwater resources on request. The assistance provided may include financial and resource assistance as in the Tree Growing Assistance Scheme and the Land Protection Service's on-farm services. Again the work of the Land Protection Service is confined to dryland salinity and the Water Commission to irrigated areas. The Department of Agriculture is active in providing advice on salinity control in irrigation regions but currently makes only a minor contribution in dryland areas.

**Construction, Operation and Maintenance of Works:** This primarily involves the Water Commission and includes the management of the irrigation system, the construction and operation of saline drainage and disposal works and the provision of groundwater pumping. Most of the balance of salinity control works, including some drainage and pumping of groundwater, are on-farm activities and are the responsibility of private farmers, even if assisted by other agencies or carried out by private contractors.

**Liaison and Co-ordination:** Each agency now devotes significant resources, in terms of officer time, to maintain liaison and co-ordination links with other agencies. This reflects the range and distribution of salinity control activities.

Regulation: Both the Water Commission and Environment Protection Authority have regulatory functions which can impinge on salinity control. The Water Commission can regulate and set the price of irrigation water, and grant permits for private diversions and extraction of groundwater. The Environment Protection Authority is responsible for licensing and monitoring point source discharges to rivers and streams and monitoring water quality in the rivers and streams. The Department of Minerals and Energy monitors and regulates the extraction of groundwater through the provision of drilling permits.

Other functions include:

- . the management of public lands that may be associated with salinity affected areas.
- . the leading role of the Water Commission in relation to the River Murray Commission.
- . the administration of funding assistance schemes by the Rural Finance Commission and Department of Agriculture.

The relative scale of operation for each agency has been described by Mackay and Associates (1984). The Water Commission is spending about \$5 million per year on capital works and \$2 million on investigation and operation of works. The Department of Agriculture and Land Protection Service each spend \$0.5 - \$1 million on research, works and extension, and the State Forests and Lands Service and Department of Minerals and Energy each estimate their salinity related expenditures to be about \$0.25 million per year.

#### Inter-departmental arrangements

The current inter-departmental committees are shown in Figure 21. The Committee notes that:

- . research and investigation activities are the prime focus for most inter-departmental committees, although extension workers frequently co-operate closely in the field;
- . no one committee has representation from all five major ministries.
- . two of the key committees, the Technical Committee on Dryland Salting and Victorian Irrigation Research Advisory Services Committee, reflect the main division of salinity control activities into dryland salinity and irrigation related salinity, but they do overlap in respect of common interests and membership; and
- . none of the committees has sufficient independence or power to exert more than 'peer pressure' on any one agency to alter its priorities or activities.

### **10.2.2 Regional Arrangements and Community Involvement**

At the regional level, interaction between State government agencies and the community occurs through the work of extension and education officers, and the activities of advisory boards and regional consultative groups. District advisory committees have been formed by the Soil Conservation Authority and Irrigation Advisory Boards and River Advisory Committees by the Water Commission.

At present, the only example of arrangements that are specifically designed to co-ordinate the action of landholders within a catchment are the group conservation projects of the Land Protection Service. Their operation is described in Chapter 12.

Co-ordination of agencies that are now part of the Department of Conservation, Forests and Lands will be assisted at the regional level by the establishment of eighteen regional offices throughout the State. Within each region the operational arms of the Land Protection Service, Forests and Lands Service, and Fisheries and Wildlife Service will report to a regional manager.

The Victorian Irrigation Research and Advisory Services Committee has established regional committees in irrigation regions to assist in the co-ordination of activities by government agencies. At present membership of the committees does not include community representatives.

Local government can play an important role in raising community awareness of salinity and providing a focus for action. This potential has been demonstrated by the Shire of Violet Town which organised a survey of salt-affected land, sponsored meetings of landholders to discuss the problem and proposed a strategy for the investigation and control of salinity in the Shire. Some other municipalities have collected information on the salinity problems of their areas and have provided assistance for tree planting. The opportunity for local governments to address salinity problems through statutory planning provisions is discussed in Chapter 11.

The important role of regional planning authorities and the potential contribution of regional planning to salinity control are also outlined in Chapter 11.

The Committee has received submissions from many community groups in salt-affected areas. Such groups play an important part in motivating the community and ensuring that governments are aware of the community concerns.

## 10.3 ASSESSMENT OF CURRENT ARRANGEMENTS

### 10.3.1 Capacity for an Integrated Salinity Control Program

While recognising the substantial co-ordination which already exists between the activities of the State government agencies, the Committee believes that the extent of this co-ordination is insufficient to achieve the objective of an integrated salinity control program for the State. In particular we note the following deficiencies:

- The lack of State-wide objectives and policies:

There is no overall set of integrated objectives and policies defining the salinity control task, its relative priority and how it is to be tackled, nor is there a process for handling the policy development, co-ordination and review function across all salinity control activities.

- The lack of a State plan for salinity control:

Similarly, there is no State plan for salinity control which can identify all the elements of proposed salinity control projects and activities in terms of their relationships, sequence and priority. Such a plan would also detail the specific strategies and approaches to be used.

- No integrated salinity control budget:

There is no integrated budget for all salinity control activities, only a series of agency budgets which to varying extents recognise and identify their salinity control expenditures and receipts. There is very limited capacity to determine budget allocations or to re-allocate funds within the total framework of salinity control activities across agency and ministry boundaries.

- No overall evaluation and review of performance:

Because of the above factors, it is virtually impossible to systematically monitor and evaluate the efficiency and effectiveness of all salinity control activities as a whole. Within each agency some evaluation is possible and with joint research projects there is a common interest in evaluating the results of research.

- The lack of a co-ordinated research strategy:

Although the Inter-departmental Committee on Dryland Salting and the Victorian Irrigation Research and Advisory Services Committee ensure that each agency is aware of related research in other State organisations, they do not provide a mechanism for setting priorities and objectives and for review and evaluation of a State-wide program for salinity research.

### 10.3.2 Capacity for Co-ordinated Land Use Planning

Apart from the group conservation projects of the Land Protection Service, the Committee is not aware of on-going programs to ensure a co-ordinated effort amongst landholders within salt-affected catchments. We believe that for salinity control to be effective, there must be the capacity for action taken by individual landholders to be co-ordinated at the sub-catchment and catchment level. This applies in both irrigated and dryland agricultural regions.

### 10.3.3 Effective Use of Expertise

Throughout the Inquiry, we have been greatly impressed by the skills and dedication of the agency staff who have guided us during inspections of salt-affected areas and who have presented so much worthwhile information at our public hearings. Victoria must fully utilise the abilities of these people. Unfortunately, salinity control at field level suffers from the fragmented responsibilities of the functional agencies. Of particular concern to the Committee is:

- the lack of involvement of the Department of Agriculture in dryland salinity, particularly since agronomic measures will play an increasingly important role in salinity control;
- the lack of involvement by the Groundwater Branch of the Department of Minerals and Energy in a functional capacity as part of a routine salinity control program.

The Committee also questions the lack of participation by the Land Protection Service in the control of land degradation within irrigation regions. The experience by Land Protection Service officers in the assessment of land capability and in amelioration of degraded land should not be overlooked when addressing the problems of the irrigation regions. Increasing attention to tree growing also makes the participation of the State Forests and Lands Service important in both dryland and irrigation areas.

#### **10.3.4 Community Consultation and Involvement**

Community consultation has been a significant and laudable feature of salinity management, particularly in Northern Victoria. However it has usually taken the form of a presentation by government agencies to the affected communities of a set of options, followed by a period for public comment which the agency has taken into account when making the decision. More recently, community representatives have been members of teams that have identified and assessed the options. While these approaches may remain appropriate for some types of salinity control schemes, the future importance of community-based initiatives must be taken into account. This will become increasingly important in Northern Victoria where local communities must co-ordinate their salinity control measures and identify areas to be set aside for future operations associated with the disposal of saline wastes. The role of government agencies will then be to provide expert advice to assist in the resolution of the problems by the local community.

### **10.4 FUTURE ARRANGEMENTS**

#### **10.4.1 General**

From the foregoing considerations it is apparent that any future arrangements for salinity control must be able to provide the following:

- . clearly defined responsibility for salinity control throughout the State,
- . integration of salinity control on a State-wide basis,
- . effective use of the operational expertise of the relevant government agencies,
- . co-ordination of action by landholders within salt-affected regions,
- . encouragement of a multi-disciplinary approach to the problems,
- . community involvement in developing and implementing schemes for salinity control,
- . measures that are adaptable to different regions and to changing conditions,
- . effective integration with other forms of land and water management,
- . adequate capacity for inter-governmental co-operation.

To achieve these requirements, the Committee believes there should be the capacity to establish a framework of State objectives, policies and plans within which a series of regional and local strategies would operate. This could enable the responsibility for salinity control at the State level to be clearly defined and an integrated policy developed. It would also enable the specific and varying needs of each region to be properly taken into account. The river catchment approach could be incorporated to the extent considered appropriate and the involvement of the regional community would be facilitated. The individual contributions of specific agencies and links with the broader management of land and water should be co-ordinated, not only at the State level but also at a regional and local level.

It is therefore necessary to assign responsibility for the central management of salinity control and for regional and sub-regional planning and implementation.

#### 10.4.2 Central Management

##### Functions

The following functions are required at the State level to provide properly integrated management of salinity control:

- . policy development and co-ordination,
- . planning and programming of salinity control,
- . financial management and budgeting,
- . evaluation and review,
- . research co-ordination,
- . education and dissemination of information,
- . consultation and community involvement.

As noted in Chapter Nine, the Committee believes that the functions should apply across all aspects of soil and water salinity in both dryland and irrigated agricultural areas.

##### Organization and Responsibilities

There are three basic options for the management of these functions:

- . a new agency can be established with responsibility for all the functions,

- . the central management functions of existing agencies can be independently strengthened,
- . an existing agency can be given responsibility for the functions.

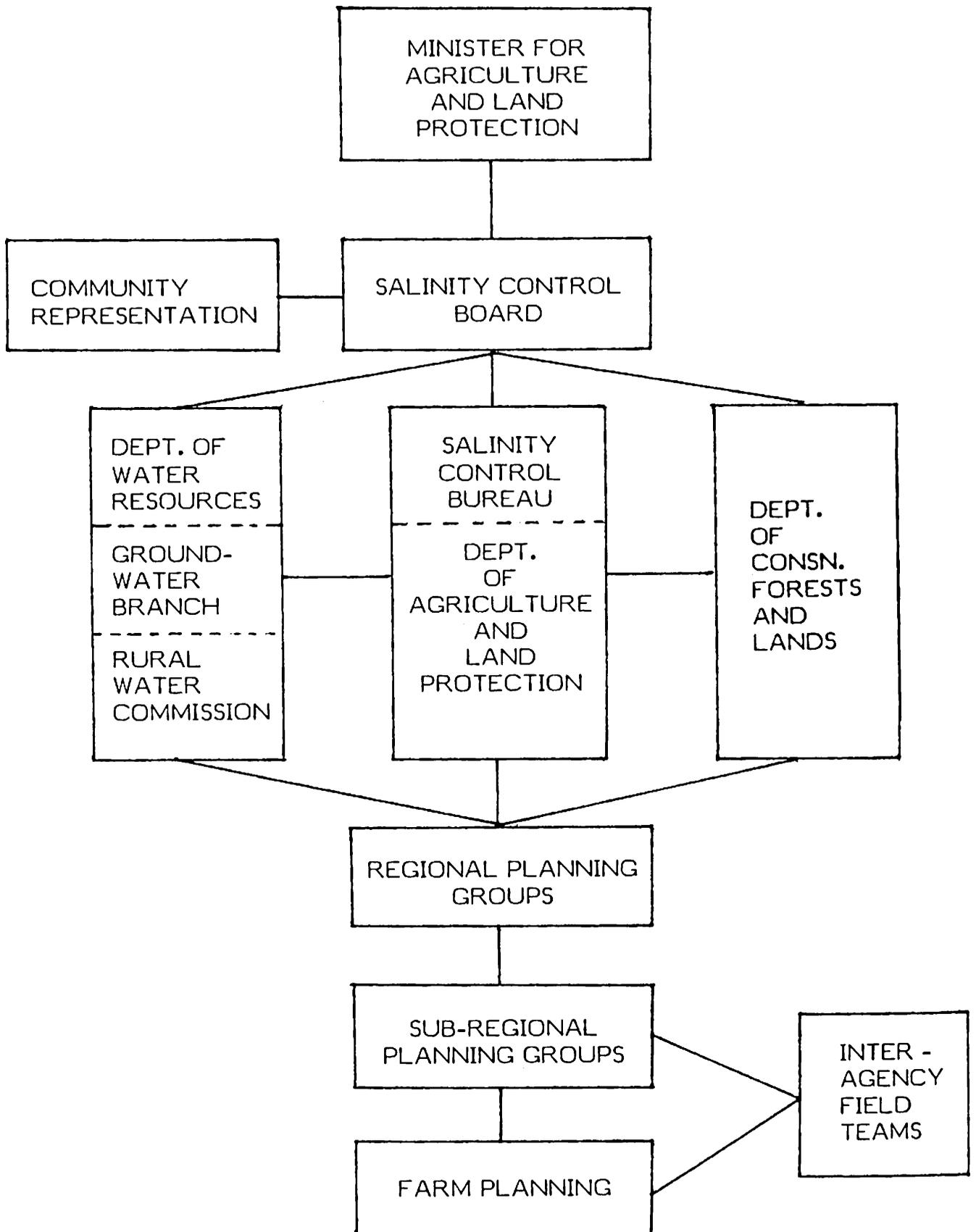
In this context an "agency" is any government department, ministry, authority or commission associated with salinity control.

An entirely new agency is not favoured. Although it could provide a focus for salinity management and a strong, independent approach, it would add a further structure to an already complex bureaucracy, would consume additional resources, and could tend to isolate salinity control from other aspects of land and water management.

The central management function of existing agencies and the co-ordination of their activities can be strengthened in a number of ways. For example, the Committee received strong representation from some government organisations advocating the formation of a Ministerial Council to oversee the continued central management by all agencies. We do not support this approach because of its strong dependence on voluntary inter-departmental co-operation, the associated fragmentation of responsibility, and susceptibility to the parochial interests of each agency.

Our preferred approach is for the ministerial responsibility for the central management of salinity control to reside with one Minister and for that Minister's department to be the "principal agency" with the capacity to assist substantially in the day-to-day co-ordination of salinity control. We further suggest that, at least within the immediate future, the development of policy and the oversight of the central management functions should be the responsibility of an independent Salinity Control Board composed of part-time members and serviced by a Salinity Control Bureau located within the principal agency. In this way, a well defined, independent focus for salinity control is immediately provided without the need to create another agency, and a forum is available for representatives of government departments and the community to develop and assess salinity control strategies. The preferred arrangements are shown in Figure 22.

FIGURE 22 PREFERRED ORGANISATION OF SALINITY CONTROL



## Responsibilities of the Salinity Control Board

The purpose and functions of the proposed Salinity Control Board are listed in Table 10.1. They are directed principally at the development of a State-wide strategy for salinity control and at ensuring co-ordination of the activities of the operational agencies. Operational responsibility for implementing salinity control within the guidelines of the strategy would remain with those agencies. The Board would report directly to the responsible minister.

The Board would be responsible for preparing an integrated budget for Government expenditure on salinity control in Victoria and for allocating the relevant funds for the salinity control programs of each functional agency. The Board would also be responsible for establishing guidelines for the distribution of funds by the Rural Finance Commission under the Salinity Control Loans Scheme and Salinity Grants Scheme proposed in Chapter 14.

## Composition of the Salinity Control Board

The Board should be composed of the following part-time members:

- chairperson appointed by the responsible Minister,
- the permanent heads of the Department of Agriculture, Department of Conservation Forests and Lands, Department of Water Resources, Rural Water Commission, and Rural Finance Commission,
- two representatives of the rural community, one of whom should be nominated by the Victorian Farmers and Graziers Association,
- one representative of conservation groups,
- one representative of non-metropolitan local government,
- the senior officer of the Salinity Control Bureau (non-voting).

Table 10.1  
Role of the Salinity Control Board

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**Purpose**

- . to recommend and review State policies and objectives for salinity control,
- . to ensure that State policies and objectives for salinity control are achieved through adequate co-ordination of the activities of functional agencies and through community-based action.

**Functions**

- . development of a State-wide strategy for salinity control,
  - . establishment of priorities for salinity control,
  - . preparation of an integrated budget and allocation of funds for salinity control,
  - . co-ordination of research and investigation by functional agencies,
  - . overall co-ordination of salinity control planning at all levels,
  - . integration of the salinity control programs with other aspects of land and water management,
  - . community education in salinity,
  - . establishment of compatible data bases associated with salinity control,
  - . evaluation and review of salinity control programs,
  - . preparation of an Annual Report to Parliament on progress in salinity abatement throughout the State.
-

The Board should also have the capacity to invite as observers to its meetings representatives of the River Murray Commission, CSIRO, and governments of New South Wales and South Australia.

### Lifetime of the Board

We recommend that the Board be established for an initial period of not more than five years. Further need for it will depend upon the extent to which the integrated program which it will have developed could then be implemented in its absence.

### Role of the "principal agency"

The principal agency would be responsible for establishing a Salinity Control Bureau to provide administrative and technical support for the Board. The Bureau would be staffed by a small group of full-time officers supplemented by the secondment of specialists from the operational agencies. For administrative purposes, the Bureau should be located in the principal agency, but would be responsible only to the Board.

In addition to accommodating the Bureau, the principal agency should have the capacity to act as the lead agency in the co-ordination of salinity control at the regional and local levels. It would be responsible for co-ordinating the contribution of government agencies to the development and implementation of regional and local strategies.

### Selection of the "principal agency"

The principal agency should have the following attributes:

- breadth of perspective,
- capacity for strategic policy approach,
- resources and structures at a regional level as basis for helping to develop regional strategies,

- . capacity to facilitate co-operation,
- . acceptability to other agencies,
- . understanding of salinity control.

Agencies which satisfy these criteria are the Department of Conservation Forests and Lands, Department of Agriculture, Department of Water Resources and Rural Water Commission. We prefer as the principal agency an organization which is responsible for land management rather than water management. This is because an attack on the causes of salinity problems will require widespread changes in land management practices. Furthermore, these land management agencies already work closely with private landholders throughout the State.

The water agencies will continue to play a vital role in salinity control through the management of water supply, drainage, and river regulation. In addition, other government agencies, including the Department of the Premier and Cabinet, Department of Management and Budget, Ministry for Planning and Environment, and Environment Protection Authority, will continue to contribute to salinity control through their particular areas of responsibility. However, none of these has the required resources or expertise to enable it to act as the principal agency.

The Department of Agriculture and the Department of Conservation Forests and Lands have expressed a willingness to act as the principal agency. The Department of Agriculture has the following advantages:

- . an existing major involvement in the control of salinity in irrigation areas,
- . an active extension role throughout the State,
- . regional offices throughout the State,

- major expertise in agronomy,
- research facilities at several centres in salt-affected regions.

However, it has made only a minor contribution so far to the control of salinity problems in dryland areas, has directed its activities principally at the promotion of agricultural productivity, and lacks a broad land and water management perspective.

The Department of Conservation Forests and Lands has the following advantages:

- experience, through the Land Protection Service, in the control of land and water degradation outside constituted irrigation districts,
- an active extension role by the Land Protection Service in dryland areas, including the management of group conservation projects,
- development of a strong regional structure,
- the incorporation of three organisations of relevance to salinity control - the Land Protection Service, the State Forests and Lands Service, and the Fisheries and Wildlife Service.

However, its experience in salinity control has concentrated on non-irrigated regions and it does not have broad agronomic expertise.

The Committee notes that the advantages of each department are largely complementary and that close co-operation between the departments will be essential for the success of a salinity control program. In fact, the State's capacity for salinity control would be greatest if the relevant skills of both departments were combined by incorporating the Land Protection Service within the Department of Agriculture to create a Department of Agriculture and Land Protec-

tion. Such a department should then be the principal agency and its Minister would be the Minister responsible for the central management of salinity control.

If such an amalgamation does not take place, the Committee would favour the Department of Agriculture as the principal agency.

#### **10.4.3 Regional and Sub-Regional Arrangements**

The proposed administrative arrangements for regional and sub-regional co-operation in salinity control are described in the next two chapters. The arrangements consist of -

- . co-ordination of regional planning for salinity control, within the guidelines of the State strategy, by the Salinity Control Board operating through the principal agency,
- . at the sub-regional level, the establishment of "group salinity control schemes" by the local community with assistance from appropriate agencies and taking into account the regional plans,
- . the preparation of farm plans under the guidance of government agencies and an inter-agency field team.

#### **10.4.4 Role of the Land Protection Service**

The expertise of the Land Protection Service in initiating and assisting the involvement of landholders in group conservation projects and in promoting changes in farming practices will be of particular importance in the development and implementation of salinity control programs. The Land Protection Service should be able to contribute its skills not only to dryland areas but also within constituted irrigation districts. The officers of the Land Protection Service should be available to advise and assist the extension officers of the Department of Agriculture and Rural Water Commission who already operate in the irrigation regions.

#### 10.4.5 Location of the Groundwater Branch

The Groundwater Branch, currently located in the Geological Survey Division of the Department of Minerals and Energy, will play an increasingly important role in the development of salinity control strategies. Whereas, in the past, it has been concerned principally with the assessment of the characteristics of the groundwater resources, it is now being called upon to advise on the management of the resource. It must have the capacity to collect and analyse vital information and to contribute effectively to the development of salinity control programs. It is severely understaffed for such work. Furthermore, to allow its expertise to be used more effectively, there would be considerable advantages in locating it within the Department of Water Resources.

### 10.5 CONCLUSIONS AND RECOMMENDATIONS

#### 10.5.1 Conclusions

- (i) A major drawback to salinity control has been the fragmentation of responsibility for it between government agencies. The responsibility is currently divided between the Ministers of Agriculture, Water Resources, Minerals and Energy, Conservation Forests and Lands, and Planning and Environment, and over twelve organisational units under these Ministers.
- (ii) As a result, the capacity for an integrated salinity control program in the State is limited. There is currently a lack of State-wide objectives and policies, of a State plan for salinity control, of an integrated salinity control budget, of overall evaluation and review of performance, and of a co-ordinated research strategy.
- (iii) The functional agencies operate effectively within their areas of responsibility, but the lack of involvement by the Department of Agriculture in dryland salinity, by the Land Protection

Service in irrigation regions, and by the Groundwater Branch of the Department of Minerals and Energy in a functional capacity as part of a routine salinity control program, constrains the use of the expertise unnecessarily.

- (iv) The current arrangements for inter-departmental co-operation provide effective exchange of information but lack a mechanism for the formal co-ordination of action.
- (v) The only routine schemes for the co-ordination of action by landholders in salinity control are the group conservation projects of the Land Protection Service. There is a need for similar schemes in irrigation regions.
- (vi) Community consultation in salinity control has been adequate to date but there will be an increasing need for community-based initiatives. Local government and local community groups have the potential to play an important role in the management of salinity.
- (vii) An organisational framework which would allow these points to be addressed requires responsibility to be assigned for the preparation at the State level of:
  - . objectives,
  - . policies and plans for salinity control,
  - . the capacity to ensure that the resulting strategy is implemented by the appropriate agencies,
  - . the preparation of regional and sub-regional plans within which the action of agencies, landholders and other parts of the community can be co-ordinated.

## 10.5.2 Recommendations

- R15. A Victorian Salinity Control Board should be established for an initial period of five years to recommend and review State policies and objectives for salinity control and to ensure that the policies and objectives are achieved through co-ordination of the activities of functional agencies and through community-based action.
- R16. The Salinity Control Board should consist of part-time members representing government agencies and sections of the community and should be the responsibility of a single Minister.
- R17. A government agency should be designated as the "principal agency" responsible for assisting in the day-to-day co-ordination of salinity control activities and for providing technical and administrative assistance to the Salinity Control Board.
- R18. The Land Protection Service should be transferred to the Department of Agriculture and the resulting Department of Agriculture and Land Protection designated as the "principal agency" for salinity control, and its Minister as the responsible Minister.
- R19. If that transfer does not take place, the "principal agency" should be the Department of Agriculture and the responsible Minister the Minister for Agriculture.
- R20. Section 3 of the Land Utilisation (Amendment) Act, 1981 should be changed to permit the operation of the Land Protection Service in constituted irrigation districts, and officers of the Land Protection Service should then be available to provide advice and assistance in establishing group conservation projects in irrigated regions.

R21. The Groundwater Branch should be provided with additional resources to facilitate its vital role in salinity control and transferred from the Department of Minerals and Energy to the Department of Water Resources to facilitate the involvement of the Branch in the management of groundwater problems, including salinity.

## CHAPTER ELEVEN

### PLANNING AND REGULATION

#### 11.1 INTRODUCTION

Strategic planning for salinity control must take place at the State, regional and local level. It requires the setting of objectives, defining the means of achieving the objectives, and establishing schedules and priorities. Such planning will concern the use of both water and land and will be characterised by long-term considerations. It will play a vital role in co-ordinating the activities of landholders, government agencies and other sections of the community.

In this chapter, we describe the type of planning that is required for salinity control and comment on the associated regulations that may be necessary to help implement the plans.

#### 11.2 STATE WIDE STRATEGIC PLANNING

A State Salinity Control Strategy should be developed by the Salinity Control Board. The Strategy should include:

- broad objectives for salinity control in the State,
- short and long term measures for achieving those objectives, including associated research and education strategies.
- schedules for the implementation of the measures,
- priorities for the allocation of finance and manpower,
- allocation of responsibilities to appropriate functional agencies.

The Salinity Control Strategy should be linked to other aspects of land and water management by recognising and contributing to other related strategies, including the following:

- the State Conservation Strategy, aimed at ensuring the long term conservation of nature and natural resources in Victoria which is being prepared by the Ministry for Planning and Environment,
- a State Water Plan which is being prepared by the Department of Water Resources,
- a Strategy to Reverse Tree Decline in Victoria which has been prepared by the Garden State Committee in conjunction with the National Tree Program (Victoria) Task Group and the Farm Tree Groups, and
- the State Government Economic Strategy.

The Committee notes the lack of a broad land use policy in Victoria and a strategy for agricultural development. Both would assist the formulation and integration of a Salinity Control Strategy.

### 11.3 REGIONAL PLANNING

#### 11.3.1 Scale

Planning for salinity control essentially involves planning to modify the interception and drainage of water. It must therefore relate to appropriate hydrological components of the landscape. In general these will be surface water catchments. However, recognition must also be given to cases where the surface catchment does not correspond to the groundwater catchment.

To allow connection between the causes and effects of salinity to be recognised, the Committee advocates the preparation of regional control plans for the major catchments shown in Figure 6. Where these catchments are part of the larger Murray Basin, the inter-relationship between activities in each catchment must be taken into account.

Because irrigation involves the transfer of water across natural catchment boundaries and because of the inter-dependence within irrigation regions as a result of the distribution system for water, regional planning at the level of irrigation regions may also be appropriate.

### **11.3.2 Form**

The regional plans for salinity control are expected to identify preferential recharge zones, preferred land management practices for these zones, methods of encouraging those practices and a schedule for their implementation. Where interception and drainage of saline water is required, the plans should specify the disposal methods for the water. The plans would also designate sites that may have to be reserved for future management of salinity, e.g., for the operation of evaporation basins or route of pipelines. Where insufficient information is available to determine necessary control measures, the regional plan should incorporate a program of research and investigation.

### **11.3.3 Responsibilities**

The responsibility for ensuring that regional salinity control plans are prepared would rest with the Salinity Control Board. Co-ordination and preparation could be delegated to the principal agency. Other participants would be appropriate functional agencies, the Ministry for Planning and Environment, and representatives of landholders and municipalities.

### **11.3.4 Relationship to Other Regional Planning**

Salinity control planning must not be undertaken in isolation from other land use planning, and from other objectives of development and conservation. A salinity control plan should be a component of regional plans and policies which encompass a broader range of factors. These include:

- . local government planning schemes,
- . State Environment Protection Policies as proposed by the Environment Protection Authority,
- . catchment plans that may be prepared by a water catchment authority,
- . strategic plans prepared by regional planning authorities.

The Committee notes and commends the initiative of the Loddon-Campaspe Regional Planning Authority in incorporating salinity control policies and actions in its draft Strategy Plan released earlier this year.

Environmental Assessment Procedures : The Ministry for Planning and Environment described how the environmental assessment procedures, under the Environment Effects Act, have been applied to specific salinity mitigation projects. These projects have been the Lake Tyrrell Scheme - Stage 1 (1978), the Lake Wahpool Salt Harvesting Project (1982), and the Management of Lake Charm and Cullens Lake (1984). The Ministry noted the shortcomings of providing advice in a situation in which long term policies for water management and agriculture in a region do not exist. The Environment Effects Act is currently under public review. As part of the review, the Committee would welcome consideration being given to a broader application of the Act to promote assessment of development programs and strategies.

## 11.4 SUB-REGIONAL PLANNING

### 11.4.1 Scale

Within the wider regions there will be groups of landholders within smaller sub-catchment or irrigation districts who are linked by a common salinity problem. As noted by Mrs. S. Stone, a rural sociologist, membership of the groups may be based not only on

geographical factors but also on social considerations. These groups require the incentive and resources to develop sub-regional salinity control plans in the context of the broader regional plans.

#### **11.4.2 Form**

The sub-regional plans will contain information of a type similar to the regional plans but of a more specific nature. In irrigation regions, the relationship between the drainage requirements of individual farms and those of the sub-region will be recognised. The lack of such co-ordinated planning has been emphasised to the Committee by irrigators including the Goulburn Irrigation Region Drainage Action Committee.

#### **11.4.3 Responsibilities**

Currently the Land Protection Service successfully assists planning at this level, through the group conservation projects in dryland agricultural area. The operation of these projects is described in Chapter 12. Further extension of projects of this type to other areas is warranted.

There is an urgent need for similar co-ordination of landholders in irrigation regions. The experience of the Land Protection Service in establishing group projects should be used.

In both the dryland and irrigated areas, the inter-agency field teams which are described in Chapter 12, should contribute to the preparation of the sub-regional plans.

Responsibility for encouraging sub-regional planning and ensuring co-ordinated contributions from relevant government agencies throughout the State will rest with the 'principal agency', as noted in Chapter Ten.

#### 11.4.4 Relationship to other Planning

The planning for salinity control should not take place in isolation. The sub-regional plans should take into account not only the broader regional plans but also the land use plans of local municipalities and special management plans for specific areas such as wetlands and other wildlife habitat. The sub-regional groups could well develop into "conservation districts" with interest in a range of land and water management issues.

### 11.5 FARM PLANS

#### 11.5.1 Scale and Form

The smallest planning unit of relevance is the individual farm. A farm plan, as described by Costin and Coombs (1982), consists of two main components - one concerning structural works to control the movement of water and to stabilise drainage lines, and the other relating to cropping and pasture improvement and associated management. It essentially subdivides the farm into land use capability groups based on agricultural potential.

The Soil Conservation Authority (Land Protection Service) explained to the Committee that farm plans can provide:

- . information on the existing situation,
- . information on the constraints to plant growth and optimum production,
- . an identification of areas contributing to salting and identification of areas where salting may occur,
- . the system for manipulating catchment vegetation so as to optimise the use of soil water and reduce accessions to groundwater and at the same time increase farm productivity,

- a systematic approach to land use and management which will provide a basis for livestock, crop, timber and wildlife production which achieves salinity control and prevention and concisely indicates works required,
- a whole farm approach to the best use of the land's physical resources,
- a plan for future management.

### 11.5.2 Responsibility

Currently farm plans are prepared at the initiative of the landholder. Although the importance of farm plans was stressed at Committee hearings by a number of organisations, they acknowledged that there was generally little awareness of the value by most landholders and no major incentive for their preparation. Costs of up to \$10,000 were quoted for the preparation of plans by consultants in some dryland area. In the irrigation areas, the Department of Agriculture and Water Commission provide advice on the preparation of farm plans. However, only fourteen percent of farmers in the Goulburn-Murray Irrigation District have whole-farm plans.

Farm planning could play a vital role in salinity control. It could be an effective method of providing the landholder with information on salinity control methods, could assist in the integration of salinity control with other aspects of farm management, and could assist in relating activities on the farm to sub-regional and regional planning.

In Chapter 12 we describe how the inter-agency field teams could contribute to farm planning, and in Chapter 14 we suggest the provision of financial incentives to encourage such planning.

## 11.6 REGULATIONS

### 11.6.1 General

The Committee believes that the most effective and enduring changes in land management by private landholders will result from voluntary action in response to the provision of information and to encouragement by other landholders. Regulations should only be applied where voluntary co-operation is unlikely or will not be effective.

Regulatory methods may be necessary to control certain practices such as the clearing of vegetation and to facilitate the transfer of water entitlement and to encourage changes in some practices at the required rate.

### 11.6.2 Vegetation clearing controls

The prevention of further clearing of native vegetation in recharge areas is discussed by Gutteridge, Haskins and Davey (1983). Tree clearing can be restricted within municipalities where control of groundwater recharge is necessary under the powers of the existing Town and Country Planning Act.

The Committee notes the capacity in Western Australia and South Australia for the State Government to influence control over tree clearing. We encourage further consideration of such measures for application if necessary as part of a State salinity control strategy.

### 11.6.3 Transferable water entitlements

The advantages to salinity management of a system of transfereable water rights has been discussed in Chapter 7. The desirability of introducing such a system has been the subject of the Committee's concurrent Inquiry into Water Allocations in Northern Victoria. The Committee advocates the introduction of a system of transferable water entitlements on a limited basis and subject to a number of qualifications.

#### 11.6.4 Regulatory control in specific areas

The need for regulatory control, in some situations, may be justified. Further consideration should be given to the need for and the adequacy of such measures. However, the Committee emphasises that no regulatory controls should be introduced unless voluntary co-operation has failed.

### 11.7 CONCLUSIONS AND RECOMMENDATIONS

#### 11.7.1 Conclusions

- (i) Strategic planning for salinity control must take place at the State, regional and local level, and incorporate objectives, implementation schedules and associated research and education strategies.
- (ii) Regional planning for salinity control should occur at the level of broad catchments or irrigation regions, and should be closely integrated with more comprehensive planning processes.
- (iii) Sub-regional planning at the level of small sub-catchments is a necessary requirement for the effective co-ordination of salinity control measures on each farm.
- (iv) Farm planning has the potential to ensure that salinity control measures on a farm are integrated with other aspects of farm management and to assist in implementation of the sub-regional strategies.
- (v) Regulations should only be applied where voluntary co-operation is unlikely or will not be effective. The most effective and enduring changes in land management by private landholders will result from voluntary action in response to the provision of information and to encouragement by other landholders.

However, further regulatory methods may be necessary to control certain practices, such as the clearing of vegetation, to facilitate the transfer of water entitlement, and to encourage changes in some practices at the required rate.

#### 11.7.2 Recommendations

- R22. The Salinity Control Board should be responsible for ensuring that appropriate planning for salinity control takes place at the state, regional and local levels.
- R23. A State Salinity Control Strategy should be prepared by the Salinity Control Board and form a component of more broadly based State strategies.
- R24. The preparation of regional, sub-regional and farm plans for salinity control should be facilitated by assistance from government agencies co-ordinated through the Salinity Control Board.

CHAPTER TWELVE  
EDUCATION, EXTENSION AND COMMUNITY AWARENESS

12.1 INTRODUCTION

The Committee has stressed in previous chapters the importance of action by landholders as part of a co-ordinated approach to salinity control. While recommending the use of some financial and regulatory measures to encourage appropriate use of land, we recognise that the success of salinity control programs will depend largely on voluntary action by farmers. The effectiveness of such action will depend upon the knowledge on which it is based. Adequate provision of relevant and reliable information and advice to landholders is therefore essential.

We also note that salinity is not just a problem for the landholder, but should be seen as a widespread environmental problem with significant economic and social effects. Awareness of the problem throughout the wider community is therefore important.

This chapter examines the education of landholders and the community in salinity. It concentrates on the vital role of the extension services of government agencies. In reviewing the many submissions on this subject, the Committee has welcomed the assistance of Dr. H.S. Hawkins and Mr. J.W. Cary from the Agricultural Extension Section of the School of Agriculture and Forestry, University of Melbourne.

12.2 CURRENT ARRANGEMENTS

**12.2.1 State Government Agencies**

Responsibilities

Six government agencies provide advice on salinity control to farmers and the community. They are the Department of Agriculture, Rural Water Commission, Land Protection Service, Department of Minerals and Energy, Forests Extension Branch of the Department of Conservation, Forests and Lands, and Ministry for Planning and Environment.

**The Department of Agriculture** provides advice on a broad spectrum of agronomic subjects across the State, but its advisory activities in salinity management are concentrated in irrigation regions. As part of their responsibilities, twenty-three officers provide advice on farm planning, land layout, soil amelioration, use of saline water and crop selection. In dryland agricultural areas, officers of the Department of Agriculture advise on agronomic measures that may be associated with salinity control. However, as emphasised by the Bendigo District Office, the lack of data on the effectiveness of agronomic techniques limits the capacity of the Department to provide reliable advice.

**The Water Commission** employs seven staff, located at Kerang, Shepparton, Swan Hill and Red Cliffs, to advise irrigators. Advice is directed towards layout of irrigated land, drainage and groundwater extractions by farmers. The Commission provides a design service for the layout of irrigated farms. A Schools Education Officer spends part of his time on salinity matters.

**The Land Protection Service** employs thirty extension officers through the State. They spend up to thirty percent of their time on dryland salinity. The extension program is directed at the treatment of recharge areas to reduce the volume of water draining to groundwater, and the treatment of salt-affected discharge areas.

**The Groundwater Branch of the Department of Minerals and Energy** offers advice to farmers on sources of groundwater and the interaction of salinity and groundwater. However, no formal extension service exists.

**The Forest Extension Branch of the Department of Conservation, Forests and Lands** administers advisory and incentive programs aimed at promoting commercial and amenity tree-growing. These programs are directed at the whole rural area of Victoria and have relevance to both irrigation and dryland salinity. The programs involve three extension foresters and utilise field foresters based in fifty locations throughout the State. The major incentives programs operating are

the Tree Growing Assistance Program which will provide \$240,000 in grants to landowners in 1984/85, and the Farm Forestry Loan Scheme which will provide about \$110,000. The Branch estimates that, of these figures, about 25% can be related directly to salinity control concerns, and up to 40% could be indirectly related through the broader benefits of forestation of broader recharge areas.

**The Ministry for Planning and Environment** employs a Regional Environmental Officer in Bendigo who, as part of his work, contributes to the awareness of salinity by the community.

### Techniques

**General:** Many of the techniques by which information is provided to the community are common to several agencies. For example, the Department of Conservation, Forests and Lands has described how emphasis is given to dealing directly with farmers on site and working with farmer and landholder groups. Increasing emphasis is being placed on demonstration areas, farm walks, field days and seminars. Pamphlets, articles in local papers, displays at country shows and major field days are all used to good effect. Literature, specifically related to salinity, is produced on a regional basis wherever possible. Mass media resources are used frequently.

**Farm Plans:** The preparation of a farm plan, as described in Section 11.5.1, can be an important means for providing information to a farmer and putting the information to use. The Water Commission and Department of Agriculture assist in preparing farm plans in irrigated regions and the Land Protection Service in dryland areas.

**Group Conservation Projects:** Of particular interest to the Committee because of their capacity to co-ordinate action by neighbouring landholders are the group conservation projects of the Land Protection Service. Under the Soil Conservation and Land Utilization Act 1958, two or more landholders may formally agree to co-operate together with the Soil Conservation Authority (Land Protection Service) to achieve soil conservation and control of

erosion and/or soil salting on their land. This legislation provides a means of obtaining co-operation on a planned and programmed basis and in a way in which government assistance may be provided.

Mr. Seacombe and Mr. Brewin, soil conservation officers from the Benalla office of the Land Protection Service, described how group action on soil conservation, erosion control and dryland salting in the North East now encompasses some 855 square kilometres of farm land and involves 640 landholders. An example is the Sheep Pen Creek Conservation Project which involves 50 land managers controlling 140 square kilometres of which eight square kilometres are visually affected by dryland salting. The application of the group approach to creating awareness of the salting problem in this area and the subsequent implementation of co-operative works with land managers has now resulted in substantial control of the salt areas and a significant start on treatment of the identified recharge zones. A similar project involving 140 land managers has commenced in the Dundas region of south-west Victoria.

The Land Protection Service strongly recommends the use of group extension procedures consisting of the provision of suitable information to stimulate interest, adoption of the ideas which fit the group needs, legitimation by influential group members, and a group decision to proceed, leading to action.

### Co-ordination

Much of the co-ordination of extension activities by government agencies has resulted from informal arrangements between the field staff. In irrigation regions co-ordination has been assisted by the Victorian Irrigation Research and Advisory Services Committee. It is composed of senior officers from the Department of Agriculture, Water Commission, Department of Minerals and Energy, Land Protection Service, State Electricity Commission and CSIRO. It has endeavoured to reduce the overlap of roles and encourage integration of effort required to deal with the problems of irrigated agriculture. A recent initiative has been the formation of three regional

committees for the Mallee area, Goulburn-Murray Irrigation District and irrigation areas in the south of the State. The two northern committees contain representatives from New South Wales and South Australia. Co-ordination of extension work in dryland areas by the Soil Conservation Authority and Forests Commission can be expected to improve following the recent incorporation of both these organisations into the Department of Conservation, Forests and Lands, and the establishment of integrated regional offices by the Department.

### 12.2.2 Other Organisations

**Educational Institutions:** School kits are provided by the Rural Water Commission and the Soil Conservation Authority, but we are not aware of how widespread is their use. The Technical and Further Education (TAFE) Centres at Kerang and Charlton are seeking further involvement by government agencies to enable additional instruction to be given on salinity as part of their farm apprenticeship and adult education courses.

**Local Government:** Several municipal councils in salt-affected regions have provided a focus for discussion and the distribution of information about salinity. This has been reflected in the high proportion of councils that have made submissions to us. Of particular interest because of the range of its initiatives has been the Shire of Violet Town. The Shire Council has appointed a Salinity Sub-Committee, sponsored field days, prepared newspaper articles, promoted a 'tree action group', and commissioned a survey of the area of salt-affected land in the Shire. Another example of local government initiative is the publication by the Mildura Regional Library Service of the Murray River Monitor which includes in each issue a summary of recent reports on salinity.

**Community Groups:** Community organisations have played a vital role in fostering awareness of salinity problems and promoting

solutions. They include groups that have been specifically formed to address salinity issues (e.g. the West of Loddon Salinity Fradication Committee, the Pipe the Salt Committee, the Kerang Irrigation Region Salinity Action Committee and the Goulburn Irrigation Region Drainage Action Committee), groups with a general interest in irrigation (e.g. Victorian Irrigation Research and Promotion Organisation), regional interest groups (e.g. the Catchment Education Trust), farmer organisations (e.g. branches of the Victorian Farmers and Graziers Association), conservation groups (e.g. the Victorian Field and Game Association, Australian Conservation Foundation and Australian Trust for Conservation Volunteers), tree promotion groups (e.g. Farm Tree Groups and the Natural Resources Conservation League), and professional institutions (e.g. Institute of Agricultural Science, Institution of Engineers). Many of these organisations have made valuable contributions to our Inquiry.

**Media Organisations:** Coverage of salinity issues by newspapers, television and radio has been substantial in the salt-affected parts of Victoria. Of specific interest has been the on-going 'Halt the Salt' campaign to raise community awareness by media groups in Northern Victoria. The Committee notes that the media have emphasised the problems of salinity rather than solutions. The Committee also believes there is a need for greater attention to be given to Salinity by the Melbourne metropolitan press.

**Commercial Organisations:** The important contribution by the private sector must be recognised. A report by a working party to the Victorian Irrigation Research and Advisory Services Committee on 'Extension Priorities for Irrigated Agriculture in Victoria' notes that private firms are active in providing various irrigation advisory services. These services complement those provided by Government agencies and frequently are available at relatively short notice to meet gaps in the latter services. The fee-for-service nature of private industry means that the type of advice is of more limited and specialised nature than that from Government agencies. Consultants include engineers, agriculturalists, surveyors, drillers and land layout designers and contractors. Commercial firms advise on irrigation

systems, including design aspects of pumps, pipelines and associated equipment and the place of their products on irrigation farms. Frequently advice is adapted to promote sales of the firm's products. The working party did not assess the relative extent to which farmers used commercial sources of advice compared with Government agencies.

## 12.3 ASSESSMENT OF CURRENT ARRANGEMENTS

### 12.3.1 Awareness and Response by Landholders

The success of the extension and education programs of government agencies must be judged mainly by the awareness of landholders and the resulting action that they have taken. Evidently much has been achieved. The Department of Agriculture points to growing awareness of salinity in the Kerang region and of rising watertable in the Shepparton region. It also notes increasing adoption of laser technology for land layout, pumping of groundwater, re-use of irrigation water and whole farm planning. However these activities, which may well be conducive to salinity control, appear to have been motivated predominantly by factors other than salinity control. In dryland agricultural areas, the Land Protection Service can point to action by landholders, working individually or in groups, which is expected to ameliorate some salinity problems.

However, awareness of salinity amongst landholders is certainly not universal. Mr. Neil Barr and Mr. John Cary from the School of Agriculture and Forestry at Melbourne University described to us their recent detailed study of irrigation farmers in the Goulburn and Campaspe irrigation districts. At least twenty percent of farmers in the Campaspe district and thirty percent of farmers at Stanhope are unaware of the presence of significant salting on their farms. A study in 1980 by Dr. H. Presser of farmers with dryland salinity indicated that some farmers did not acknowledge the presence of soil salting. Whether this situation represented ignorance of salting, an unwillingness to acknowledge it, or an attempt to rationalise the problem was not clear.

Similar conclusions can be drawn from the results of the 1984 Agricultural Census. At the request of the Salinity Committee, the Australian Bureau of Statistics included a question in the Census asking farmers to state the area of their farm which had previously been under crop or pasture, but is now affected by salt. The preliminary results are given in Section 6.4.1 of this Report. The total area, as estimated by farmers, was about half the estimate of visibly salt-affected land made by government agencies.

Evidently there is a need to create a more widespread awareness amongst landholders of salinity problems to bring about comprehensive adoption of salinity control measures. A major contribution could be made by a 'marketing' program at state and regional levels to focus and reinforce attention at the local level where on-farm action must take place. It should emphasise the high priority that the State, the community and relevant government agencies place on the salinity problem. It should also stress the associated financial benefits to landholders. At the regional level, regular public release of information on local watertable levels would focus attention on the fundamental role of groundwater in salinity problems.

### 12.3.2 Co-ordination of Landholders

#### Group Projects

As noted in Chapters 10 and 11, many submissions have stressed the important for salinity control of co-ordinating the action by landholders within a catchment or sub-region. Suggestions of the form that such groups of landholders might take have included that of the group conservation projects conducted by the Land Protection Service and described in Section 12.2.1, 'land use action clinics' as advocated by the Murray Valley League, and 'regional action groups' suggested by Mrs. Sharman Stone, a rural Sociologist. In each case the organisation and operation of the groups is largely the responsibility of the landholders. Government agencies provide specialist advice, as necessary.

As noted by Dr. Hawkins and Mr. Cary, group approaches lend themselves to the regional nature of on-farm salinity control, based on small watersheds or irrigated local areas. The success of group approaches, such as in the Eppalock catchment and the Tongala pilot scheme, suggests that they should be widely adopted in the future. Furthermore, group approaches will encourage and reinforce salinity control measures by each individual landholder and could enable benefits to a property that are the result of action on another property to be more equitably shared. We note also that such groups could have other important functions beside the co-ordination of salinity control measures.

While group conservation projects of the Land Protection Service are already available to provide a satisfactory mechanism for group action in dryland agricultural areas, a similar scheme has not been introduced in irrigation regions. The Committee believes that there is now an urgent need to do so.

#### Sub-regional Planning:

The need is further emphasised by the lack of regional plans to guide the preparation of individual farm plans and the introduction of on-farm measures in irrigation areas. We suggest a procedure whereby government agencies assist irrigators in each irrigation district to formulate a sub-regional salinity control plan, taking into account the relevant regional strategy, as discussed in Chapter 11.

The plan should include the nature of on-farm works to be undertaken and a schedule for their implementation. In Chapter 14, we suggest that the provision of subsidies for on-farm salinity control measures should be designed to encourage the preparation of sub-regional salinity control plans. There has been considerable experience in the development by irrigators and government agencies of sub-regional plans for salinity control in the irrigation districts of the Colorado Basin in the United States. This should be taken into account when establishing a related procedure in Victoria.

## Agency Co-ordination

The 'principal agency' designated in Chapter 10 should co-ordinate salinity related extension activities of government agencies in dryland areas and in irrigated areas. The role of the principal agency would be to ensure that all participating agencies are aware of each others extension activities, that these activities conform to any regional or sub-regional plans for salinity control, and that each salinity problem is addressed by the full range of available expertise.

### **Irrigated Services Division**

In irrigated regions, the Department of Agriculture has a widespread extension role throughout the regions and has principal responsibility for 'whole farm' management. However, the main extension expertise in the distribution, application and drainage of irrigation water rests with the Irrigation Service Division of the Rural Water Commission. This expertise must be closely co-ordinated with that of the Department of Agriculture. We note that some overlap in the extension services provided by these two agencies already occurs and suggest that consideration be given to amalgamating within the Department of Agriculture the expertise in on-farm management of both departments. The Rural Water Commission would then be responsible for the provision of water to farms and the drainage from farms. All on-farm advice would be the responsibility of the Department of Agriculture. The Department of Agriculture would also be responsible for ensuring that advice from

the Forests Extension Branch and the Department of Minerals and Energy is available to the farmer. The relevant expertise of the Soil Conservation Authority in land capability assessment and group conservation projects should also be utilised in irrigated regions.

#### Salinity Control Field Team:

While designation of a lead agency should assist the overall co-ordination of extension services, the Committee is concerned that the integration of the expertise of each agency in the development of salinity control schemes at the farm level will remain inadequate. To overcome this we suggest the formation of salinity control field teams - one for dryland areas and one for irrigated regions. The team would comprise a team leader, agronomist, hydrogeologist and forester. In dryland areas they would be joined by a soil conservationist and in irrigated regions by an irrigation engineer. These units would provide a 'one stop shop' source of advice for farmers with salinity problems and would also assist other extension officers operating within separate agencies. The principal medium by which advice from the units will be provided to farmers is the preparation of farm plans.

Dr. Paul Brown from the University of Montana, USA, described to the Committee how a similar approach has been successfully implemented in the non-irrigated Triangle Conservation District of Montana. Priority for assistance to a landholder is based on the severity of the saline seep, access to the recharge area and the probability that the applicant will implement a co-operative control plan after the recharge area is delineated. An initial review is conducted with the farm operator at the site of the saline seep, monitoring bores are constructed and measurements taken by the farmer, and a reclamation plan for the farm prepared by the inter-agency team. The plan takes into account the existing farming practices and economic and management factors, such as markets for alternative crops, availability of equipment, ownership of recharge areas and the operator's management ability. Each year after the plan is provided to the landowner, follow-up is conducted to document the implementation and reclamation progress.

The Committee recognises that the Victorian conditions differ substantially from those in Montana. In Victoria, the causes are more variable and the relationship between recharge zone and saline seep is less easily defined. Nevertheless, the Montana approach provides a successful model from which lessons can be learnt in establishing a corresponding program in this State.

### **12.3.3 Adequacy of Resources in State Agencies**

Whilst most of the foregoing recommendations could be implemented with the existing resources of the agencies extension services, a concerted attack on salinity will depend increasingly on adequate extension programs and some augmentation of the extension staff will be justified.

The Committee shares the concern of the Working Party on Extension Priorities that the ratio of advisory officers to number of broad acre irrigators in the Kerang and Shepparton regions is substantially lower than the ratio for horticultural areas and should be increased. There will also be a need to ensure that the two proposed field units are adequately staffed and resourced.

### **12.3.4 Availability of Data**

Advice on salinity control will be based on limited knowledge of the specific causes and effects of salinity and of the efficacy of control measures. Because of this uncertainty a number of agencies have stressed the need to understand further those measures which may be economically attractive for reasons other than the control of salinity but which may also be expected to assist in salinity control. A close association between extension and research programs is therefore essential. This is discussed further in Chapter 13.

### **12.3.5 Curriculum and Community Education**

The State Conservation Strategy Discussion Paper which was prepared by the Ministry for Planning and Environment, notes that

environmental education in schools is ad hoc in approach and without high priority. This observation was supported by Mr. F. Jackson of the Catchment Education Trust and Mr. C. Spowart of the Kerang Irrigation Region Salinity Action Committee when they commented to us that the study of salinity and other land degradation processes is dependent upon individual teachers. No submissions were received by the Committee from the Education Department and several teacher associations that were invited to substantiate these claims. Dr. I. MacBean of the Bendigo College of Advanced Education suggested to the Committee that elements of environmental education exist in school curricula, but often without the necessary integration that would enable the student to understand principles and not just specific issues.

The Committee urges further consideration by education authorities of the value of environmental education. When directed at Victorian conditions, the study of salinity as an important example of land and water degradation deserves to be a component of such education.

The important contribution by school education officers in government agencies and by local extension officers in providing information, giving talks and conducting tours is noted. These agencies should co-operate in the preparation of a comprehensive document on salinity in Victoria.

## 12.4 CONCLUSIONS AND RECOMMENDATIONS

### 12.4.1 Conclusions

- (1) A community wide scepticism about the capacity to manage the salinity problem is largely based on an inadequate understanding of the salinity problem and its possible solutions. This must be addressed by providing not only adequate advisory services to farmers but also an effective community education campaign based on well developed programs for salinity control.

- (2) Because salinity control depends upon voluntary action by many landholders, the availability of adequate information and advice to them is essential.
- (3) Currently, advisory services are provided by the Department of Agriculture, Rural Water Commission, Soil Conservation Authority, Department of Minerals and Energy, Forest Extension Service of the Department of Conservation Forests and Lands, and the Ministry for Planning and Environment. The Soil Conservation Authority has particular responsibility for extension services in the dryland agricultural areas and the Department of Agriculture and Rural Water Commission has particular responsibility in the irrigation areas. The education institutions, local government, community groups, media organisations, and commercial organisations also play an important role in the provision of information to the community.
- (4) Already much has been achieved with the growing awareness by landholders in the community, but in some areas there is still a lack of recognition of the problem and lack of awareness of solutions.
- (5) Group action by landholders must be encouraged. At present the group conservation projects of the Soil Conservation Authority in dryland agricultural areas appear to be satisfactory but there is no corresponding arrangement in irrigated areas.
- (6) There is a need for greater co-ordination by agencies so that advice is linked to integrated plans of action and is not conflicting. There are possible advantages in amalgamating the extension services of the Department of Agriculture and the Rural Water Commission in irrigation areas.
- (7) There is also a need for the expertise of each agency in the development of salinity control schemes at the farm level to be available to farmers in an integrated form.

- (8) Most of the foreseeable requirements for extension work by agencies can be met by existing resources unless some augmentation is justified.
- (9) The future success of advisory services will be dependent on a major research effort which must be closely linked to the extension work of the agencies.
- (10) Environmental education in schools and other educational institutions could further assist the understanding by the community of the salinity problem. The contribution by government agencies to the school programs could be further assisted by greater co-ordination between the agencies.
- (11) There is a lack of understanding and awareness of salinity as a major problem by the general community, particularly in metropolitan areas. This will inhibit action by government and landholders and warrants an intensive community education program at the state and regional level.

#### 12.4.2 Recommendations

- R25. There should be further development of group conservation programs in dryland areas and the introduction of corresponding approaches in irrigation areas, based on the preparation of sub-regional plans.
- R26. The 'principal agency' for salinity control should co-ordinate advisory services in both irrigated and non-irrigated regions.
- R27. The farm advisory services of the Irrigation Services Division of the Rural Water Commission should be amalgamated with those of the Department of Agriculture.

- R28. A multi-disciplinary salinity control field teams should be formed for the dryland regions and another for irrigation regions. The field teams will provide an integrated source of advice for farmers on the management of salinity problems and will assist extension officers operating within separate agencies.
- R29. Education authorities should recognise the place and importance of salinity control in environmental education programs at all levels.
- R30. Government agencies should co-ordinate their contributions to schools of education material on salinity problems and their control.
- R31. A well publicised community education program should be established at the state and regional level and co-ordinated through the Salinity Control Board.

CHAPTER THIRTEEN  
RESEARCH AND INVESTIGATION

13.1 INTRODUCTION

The management of salinity is characterised by uncertainty. In the previous chapters the Committee has emphasised the lack of reliable information upon which to base the formulation of effective salinity control programs. The generation of relevant information through problem-oriented research, investigation and monitoring will therefore be an important part of the salinity control task.

In this chapter, the Committee reviews the priorities for research and comments on the associated organisation and management. In so doing, it has drawn on the various submissions it has received on research needs, on descriptions by State Government departments and other organisations of their research programs, and a review of this information that was undertaken for the Committee by Dr. A. Peck, Senior Principal Research Scientist, Division of Groundwater Research, CSIRO.

13.2 INFORMATION NEEDS

13.2.1 **General**

Many important gaps remain in the knowledge of salinity problems and severely restrict the development of reliable salinity control programs. The Committee notes that -

- . There is considerable confidence that the causes of salinity problems are known in principle but there is often inadequate understanding of the precise reasons for specific cases. This limits the capacity to forecast the development of problems and to select appropriate control measures.
- . The available information enables a reasonable assessment of the distribution of salinity problems throughout the State. However, substantial uncertainty about the rate of change in

the extent and severity of salinity limits the capacity to take anticipatory action and to assign priorities to a salinity control program.

- . The physical consequences of elevated levels of salt in the environment are understood in principle but the lack of reliable data on the full range of physical and socio-economic effects of salinity limits our understanding of the magnitude of the problem.
- . The understanding of salinity control techniques has advanced substantially in recent years and some can now be used with confidence. Nevertheless, knowledge is often inadequate to enable the reliable selection of a control measure, or set of measures, which will counteract the problems effectively and at least cost.
- . The selection of the most appropriate policy instruments with which to implement a salinity control program requires an understanding of the likely response of the community to various forms of incentives. While this can often be judged from past experience, the opportunity for innovative measures is limited by the uncertainty of their success.

### 13.2.2 Priorities

Information on the following is of particular importance:

#### **Causes and mechanisms of salinity:**

- . Location of preferential recharge zones for groundwater bodies that are associated with salinity problems.
- . Relative magnitude of the contributions, from all sources, of accessions to groundwater bodies in dryland and irrigation regions.

- . The relationship between the clearing of native vegetation, accessions to groundwater and the extent of seepage salting.
- . The consequences of various types of land and water management for the development of salinity problems.
- . The specific causes of the deterioration in the quality of wetlands.
- . The role of flooding and periods of high rainfall in the development of salinity problems.
- . The socio-economic factors which affect the manner in which land is managed.

#### **Extent of salinity problems:**

- . Trends in the extent and severity of soil salinity in irrigated and non-irrigated area.
- . Long term changes in the salinity levels of streams, rivers and wetlands.
- . Rates of change in the levels of watertables and estimates of the period required for equilibrium to be reached.
- . Potential for the development of further salinity problems.

#### **Effects of salinity:**

- . The social impact of salinity.
- . The economic impact of salinity.
- . Effects on human health of long-term dietary intake of elevated levels of salt.

- . Effects of shallow watertables and soil salinity on plant growth under Victorian conditions.
- . Effects of salinity on forests, wetlands and wildlife.

**Control measures:**

- . The effectiveness of alternative agricultural practices, including plant selection and soil management, in reducing recharge rates to groundwater.
- . The effectiveness of reforestation and agroforestry as control measures.
- . Effect of landforming on accessions in irrigation areas.
- . The potential for the management of irrigation water, including re-use and timing of application, as a salinity control measure.
- . Opportunities for the use of salt tolerant plants.
- . Effectiveness of various drainage systems.
- . Optimum location and design of groundwater pumping.

**Waste Disposal**

- . Optimum regulation of rivers to provide dilution flows.
- . Location of acceptable sites for the collection of saline wastes.

**Implementation of control measures:**

- . The technical, economic and sociological factors affecting farmers and the community in the adoption of salinity control techniques.

- . Optimum incentive schemes.
- . Methods of achieving group co-operation.

### 13.3 MANAGEMENT OF RESEARCH

#### 13.3.1 Requirements

The Committee considers that the following are essential requirements for an effective and efficient program of research and investigation for salinity control -

- . Facility for a range of data gathering methods, including
  - laboratory research,
  - field research, including the use of trial plots,
  - field surveys of physical factors,
  - numerical modelling,
  - short and long-term monitoring of land and water conditions
  - market and social surveys.
- . Co-ordination of research and investigation as part of a State strategy for salinity research. As part of this strategy objectives and priorities should be set and results evaluated.
- . Close relationship between the development and operation of research programs and the salinity problems in the field.
- . Effective interchange of ideas and information between researchers working within the salinity program.
- . Provision of data collections that are readily accessible and compatible.
- . Provision of research results in a form that can be readily used in the field.

- Close liaison between research and extension staff.
- Capacity for the rapid acquisition and use of relevant information from sources outside Victoria.
- Capacity to encourage experimentation and field trials by landholders and to monitor the results.

### 13.3.2 Current arrangement

#### State Government Agencies

Most research and investigation into salinity in Victoria is undertaken by Government agencies and reflects the various roles, interests and priorities of the agencies.

The Department of Agriculture has conducted research into salinity principally within irrigation regions. Since 1979 most of this work has been concentrated at the Irrigation Research Institute, Tatura. Nine research officers work at the Institute which has a salinity laboratory and where a controlled environment facility is under construction. The work has focused on the use of saline groundwater and its effects on plants, soils and watertable levels, and on soil amelioration and sub-surface drainage. At the community owned farms at Kerang and Swan Hill, land reclamation techniques and land layout have been investigated by the Department.

Dryland research by the Department has not been primarily directed at salinity problems. However, results from other agronomic research may assist in implementing salinity control techniques. The Department also funds soil surveys by the Soils Section of the State Chemistry Laboratories. The Department operates other research institutes at Hamilton, Walpeup, Horsham and Rutherglen.

The Rural Water Commission undertakes research and investigation in its Investigations Division and Irrigation Services Division. Twelve professional staff are engaged on salinity investigations, two drilling

rigs are used for exploratory drilling, and a Tile Drainage Experimental Area at Kerang is operated. Major salinity investigations centre upon the determination of local and regional geohydrology, design criteria for irrigation and drainage, and the development of drainage and disposal strategies. The Rural Water Commission has key responsibility for the design and operation of saline waste disposal schemes.

Within the Department of Conservation, Forests and Lands, the Soil Conservation Authority has directed its research and investigation at identifying plant species and management systems to reduce recharge to the groundwater while retaining agricultural productivity. This has included hydro-geological studies and the development of water and salt balances for specific study areas. Studies into plant water use and the economics of management strategies have been undertaken in conjunction with LaTrobe University. Three professional staff are engaged in salinity research. The main research unit is located at Bendigo. The State Forests and Lands Service has concentrated its salinity research on the effect of salinity on trees and on the identification and development of salt tolerant species of trees. The latter has been a joint project with the CSIRO. Recently, field trials have been established at six locations in Victoria to investigate agroforestry systems, in conjunction with the Department of Agriculture. Two research officers are engaged part-time on salinity control projects.

The Department of Minerals and Energy has conducted hydro-geological investigations of the Riverine Plain, investigations into Lake Tyrell as an evaporation disposal site and a study of the Victorian section of the Murray Basin in conjunction with Federal Bureau of Mineral Resources. Investigations into groundwater computer models have also been undertaken.

### **Inter-agency Co-ordination**

Inter-departmental committees such as the Victorian Irrigation Research and Advisory Committee and the Technical Committee on

Dryland Salting and the Groundwater Advisory Committee have helped in improving and maintaining consultation and liaison between Government agencies. These mechanisms have provided useful links between agencies and officers in identifying problems, but their role in co-ordination and directing research and allocating priorities has been limited to voluntary participation.

### **Non-Government Research in Victoria**

Only very limited funding has been available for research on salinity in institutions outside Government agencies. The most significant project has been a co-operative study between the Soil Conservation Authority and LaTrobe University on the economics of dryland salinity.

### **Research in Other States**

A number of organisations in other States undertake research of relevance to salinity control. In these organisations, research is usually directed at regional problems but the results can be important for Victoria. The opportunities for co-operative research projects with organisations in other States is discussed in Chapter Fifteen.

## **13.3.3 Assessment**

### **Co-ordination**

The need for improved co-ordination of salinity research has been emphasised in a number of departmental submissions to the Committee. At present the inter-agency research committees provide useful forums for the exchange of information and ideas, and for some co-ordination of effort, but salinity research in Victoria remains fragmented.

Lack of co-ordination is also reflected in the independent approach by agencies for Commonwealth funds upon which many of the current research programs depend. A united approach based upon a well

defined research strategy is likely to be received more favourably and would avoid competition between agencies for the same funds.

There is urgent requirement for the development of a State strategy for research into salinity as a component of a broader salinity control strategy. The preparation of the strategy would provide a means by which policies and objectives of research could be defined and priorities established.

We recommend that a State strategy for salinity research be established as soon as possible, with the opportunity for regular review and modification. Its preparation should be the responsibility of the Salinity Control Board acting on the advice of a research advisory committee. The advisory committee should be composed of not only departmental representatives but also representatives from non-government research establishments, including the CSIRO.

### **Use of expertise and facilities**

Expertise in salinity research and research facilities in Victoria are very limited. What is available must be used as effectively as possible. The Committee believes that there would be considerable advantage in consolidating these resources to some extent within a single research institute that would address salinity problems of both dryland and irrigated regions.

The Department of Agriculture's Irrigation Research Institute at Tatura appears to be the most appropriate organisation for this purpose. It already has a major involvement in salinity research, possesses a salinity laboratory and is constructing a controlled environment unit, and is located adjacent to some of the major salt affected areas of the State. We suggest that it be developed into the State's Salinity Research Institute with particular responsibility for research into farm-based methods of controlling salinity in both dryland and irrigated regions. The Institute should be jointly staffed by researchers from the Department of Agriculture, and Department of Conservation Forests and Lands, and the Rural Water Commission.

The Committee notes that there is no research organisation in Australia devoted principally to salinity research, that salinity problems are growing, not only in Victoria but also in other States, and that the development of control measures will depend substantially on adequate research. We believe that Victoria should now take the initiative, with financial assistance from the Commonwealth, and seek to establish at Tatura a salinity research unit of national and international importance.

Consideration should also be given to the use of other research institutes of the Department of Agriculture for salinity research projects and particularly for agronomic investigations.

### **Scope**

Salinity research in Victoria has concentrated on the physical aspects of the problem. This reflects the narrow professional base of the agencies. There is now a need to broaden the scope to include a greater variety of social and economic research so that the control measures can be better selected and successfully implemented.

### **Communication**

The Committee has received complaints that research results are not made immediately available to extension staff and farmers. Greater emphasis will need to be placed on liaison between the Salinity Research Institute, and other research groups, and the community. The inter-agency task forces described in Chapter Twelve will provide an important means by which the results can be interpreted and used.

### **Data base**

Groundwater data of relevance to salinity is collected by three State agencies, but because of different formats of the data bases, the information is not readily exchanged. There is an urgent need to develop compatible systems to maximise the value of the data.

## **Non-Government research**

The almost total lack of research into salinity problems by universities and other academic institutions is of concern. They can provide an important alternative and stimulus to Government research, and contribute to the development of relevant expertise. Some funding should be available to promote an interest in the subject by researchers outside Government authorities.

## **Funding and resources**

Most agencies have advocated an increase in resources devoted to salinity research. Since the principal impediment to salinity control in the immediate future is a lack of knowledge about the efficacy of possible control measures, the Committee believes that some increase is highly desirable. Possible levels and the method of allocating funds are discussed in Chapter Fourteen. The Committee notes that, while a period of intensive research and investigation is warranted within the next 5 - 10 years, this should not need to be sustained indefinitely.

## **13.4 CONCLUSIONS AND RECOMMENDATIONS**

### **13.4.1 Conclusions**

- (1) Lack of relevant information is a major impediment to the control of salinity. An effective research and investigation program is therefore one of the highest priorities for the immediate future.
- (2) Further research into many aspects of the management of salinity is warranted. The most important deficiencies in understanding are:
  - Possible changes in the severity and extent of salinity problems,

- environmental and social impacts of salinity,
  - location of preferential recharge areas for the ground-water bodies associated with salinity problems,
  - the effectiveness and economic viability of alternative cropping and soil management systems and of reforestation to counteract salinity,
  - suitable means of disposing of saline wastes.
- (3) Five State Government agencies now undertake research and investigation into aspects of salinity directly involving about twenty five professional staff. There is little research into salinity by organisations outside the State agencies.
  - (4) The effectiveness of the State's research effort is impeded by a lack of strong co-ordination between the agencies in setting priorities and objectives for salinity research, rationalising research facilities, and seeking funds.
  - (5) The scope of the research reflects the professional base of the agencies, and does not include adequate social, economic, and environmental investigations.
  - (6) Rapid access to research results by other organisations, extension officers, landholders and the community in general is essential.
  - (7) There is a need to facilitate innovation in salinity control not only by Government agencies but also amongst landholders and the commercial sector. Field trials should be encouraged and adequately monitored.
  - (8) The monitoring of changes in the extent and severity of salinity problems is currently inadequate to enable a reliable evaluation of the success of the States' salinity control measures.

- (9) An increase in research funding above the present level is warranted over the next 5 - 10 years to allow the research program to be intensified.

#### 13.4.2 Recommendations

- R32 Salinity research by State Government organisations should be co-ordinated through a Salinity Research Co-ordination and Advisory Committee which would report to the Salinity Control Board. This Committee should include representatives from State Government agencies and other relevant research organisations.
- R33 A State Salinity Research Strategy should be prepared by the Salinity Control Board as a component of the State Salinity Control Strategy.
- R34 The Tatura Irrigation Research Institute of the Department of Agriculture should be established as a major centre for research into salinity of both irrigated and non-irrigated regions. It should continue to be managed by the Department of Agriculture, but staffed by officers not only of that Department but also the Department of Conservation Forests and Lands, Rural Water Commission and Department of Minerals and Energy and augmented by socio-economic expertise. A visiting scientist program should be established and international leaders in salinity research encouraged to work at the laboratory for a suitable period.
- R35 Research into salinity by organisations outside the State Government should be stimulated by engaging in co-operative research projects.
- R36 Monitoring of salinity should be co-ordinated through the Salinity Control Board, and include systematic measurement of the salinity of groundwater, rivers and wetlands throughout the State, and of groundwater levels. The question on the

Agricultural Census requesting farmers to provide an estimate of the extent of salinity should be retained.

- R37 A compatible data base for all information on the groundwater system collected by Government agencies should be established by the Groundwater Branch, currently located in the Department of Minerals and Energy.

## CHAPTER FOURTEEN

### FUNDING

#### 14.1 INTRODUCTION

The expected costs of salinity control measures in Victoria have been assessed in Chapters 7 and 8. Other costs will be associated with the support functions of extension, research and planning. In this chapter the sources and distribution of the funds to meet those expenses are considered.

It is evident that the future control strategies will depend substantially on farm based measures, supplemented in Northern Victoria by capital works for the interception and disposal of saline water.

In this chapter we comment on who should pay for these measures, before discussing financial incentives for farm-based measures, the funding of off-farm measures and support services, and the administration of funds.

The Committee has received many submissions on this subject, some of which were in response to the release of a discussion paper on 'Financing Salinity Control in Victoria' that was prepared for the Committee by Michael Read and Associates.

#### 14.2 PAYING FOR SALINITY CONTROL

Read and Associates (1984) argue that to provide greatest economic efficiency the costs of salinity control should be borne by the person causing the problem. If that person cannot be identified, the beneficiary of the control should pay, and only if that is not feasible should the general community, through the Government, pay.

While acknowledging the logic of this approach, the Committee believes that, in the case of salinity, the following factors must also be taken into account:

- (1) The precise cause of many salinity problems is often uncertain.

- (2) The action that has led to the problem has frequently been undertaken by past generations in ignorance of the consequences and with the support of the community.
- (3) The length of time between the causative action and the appearance of a salinity problem is often at least several decades.

We conclude that, as a result of these factors, an equitable arrangement will involve funding by Governments. In the case of farm-based measures, this funding will be directed at assisting and encouraging landholders to undertake action which otherwise would be unprofitable to them.

#### 14.3 PRIVATE EXPENDITURE ON FARM-BASED MEASURES

To date farm-based works which may contribute to the control of salinity have been financed from farm income and normal sources of credit, such as trading banks. Frequently, the motivation for undertaking such works has not been the control of salinity but rather the immediate benefits for farm production. Thus, in the Goulburn-Murray Irrigation District, \$70 million was spent in the period 1979 - 1983 on layout of land, and \$10 million on the installation of groundwater pumps. Mr. G. Jones of the Department of Agriculture explained that land layout is often seen by the farmer to aid productivity, reduce labour requirements and enable more productive utilisation of water. Groundwater pumping is attractive to the farmer principally because it can augment the channel supply of irrigation water. Adoption of some salinity control measures in irrigation areas may therefore continue without Government intervention. The implementation of others will require further incentives.

In dryland agricultural areas where treatment of the preferential recharge zones does not have immediate economic benefits, private expenditure has been directed mainly to the treatment of the saline ground at the discharge site. Some landholders whose properties we visited have commenced to treat recharge areas by planting trees or changing their farming practices. However, it is evident that, without further incentives, treatment of the recharge areas by landholders will be constrained by financial factors.

#### 14.4.1 Types of incentives

Possible financial incentives to encourage the adoption of appropriate farming practices include indirect assistance, such as taxation concessions, and direct assistance. Direct assistance can include grants and loan concessions, such as subsidised interest rates, long term loans, repayment holidays and concessions on loan security.

In these cases, the Government partly offsets the cost to the landholder of salinity control measures. The Committee's attention has been drawn to the possibilities of penalties being imposed to induce the landholder to undertake salinity control. They include the use of water pricing policies and taxes on other farm inputs and outputs which contribute to salinity problems. The range of incentives is discussed further by Read and Associates (1984). Coupled with financial incentives can be regulatory and planning measures as discussed in Chapter Twelve.

#### 14.4.2 Taxation concessions

At the Commonwealth level, the Income Tax Assessment Act has provided concessions to users of primary production land. Provisions of the Act that may encourage landholders to adopt sound water and land conservation practices include immediate or accelerated write-off of capital expenditures and investment allowances. Capital expenditure on conserving and conveying water for primary production purposes is a deductible item as are expenditures related to soil conservation and drainage. However, some techniques to improve irrigation efficiency, such as land levelling operations, do not give rise to a structural improvement and consequently expenditure on such operations is not deductible under the Act. The Working Group on Incentives for Farm Based Measures in Salinity and Drainage Control in the Murray Valley (1982) argued that a broader interpretation of the Income Tax Assessment Act is warranted to ensure that investment in water conservation techniques and in drainage

works associated with irrigation practices are eligible for inclusion as tax deductible items. The Committee concurs with that recommendation.

#### 14.4.3 Concessional loans

Salinity Control Loans Scheme: A 'Salinity Control Loans Scheme' operated in Victoria from January 1980 to late 1983. It was jointly managed by the Water Commission, the Department of Agriculture and the Rural Finance Commission. This scheme has been superseded by 'Water Management Loans' under the auspices of the Rural Finance Commission.

Under these schemes the funds approved for farm irrigation over the past three years were as follows:

1981 / 82	-	Thirty-two farmers for	\$ 540,000
1982 / 83	-	Sixty-five farmers for	\$1,059,000
1983 / 84	-	Thirty-one farmers for	\$ 773,000

The loans are available to irrigators in any part of Victoria. The interest rate and terms of repayment are determined by the Rural Finance Commission on an individual basis, having regard to the farmers financial position and to the Commission's rate policy at the time the loan is made. The most common interest rate has been 13%. Where a farmer's debt position is such that further borrowing may be a burden to him but water management works are essential to protect his own property or as part of an overall attempt to ease salinity in an area, the Rural Finance Commission will consider assistance at a concessional rate down to 10% per annum. The shortfall is made up by the State Treasury.

Under the Salinity Control Loans Scheme the Water Commission was required to ensure that application proposals were technically sound and planned in detail. Under the new scheme the procedures have been streamlined and the Rural Water Commission is only required to vet a proposal if there is doubt as to whether the proposal relates to salinity control.

An adjunct to the salinity control loans was the 'Exploratory Drilling Assistance Program' in which applicants for salinity loans were able to have a hydrogeological investigation undertaken of their property. This program continues today but it is operated by the Rural Water Commission separately from the Rural Finance Commission's 'Water Management Loans' Scheme.

Submissions to the Commission have supported the concept of a salinity loans scheme and urged its continuation. The Water Commission noted that loans under the scheme probably represent only about five percent of total funds expended on farm improvement works, and questioned whether concessional loans under the scheme have facilitated works that would not have been undertaken otherwise. Staff of the Department of Agriculture and representatives of irrigators complained to the Committee that the uncertainty in the continuation of the scheme and in the interest rates that it provided inhibited its effectiveness. Many parties agreed that the close involvement of advisers from the Water Commission and Department of Agriculture as a condition under which the loans were granted provided an important opportunity to encourage proper standards of farm management.

Rural Adjustment Scheme: Salinity control measures on dryland as well as irrigated farms may also be financed under the farm improvement provisions of the Rural Adjustment Scheme. This is funded by the Commonwealth and administered in Victoria by the Rural Finance Commission. Farm improvement advances are aimed at assisting the restoration of uneconomic properties. The applicant must be unable to secure funds from normal sources at reasonable terms. The scheme is therefore an important component of the full range of measures to enable farmers to undertake salinity control and drainage works.

Commonwealth Development Bank: The Commonwealth Development Bank can provide loans for all aspects of salinity control on farms provided the undertaking is commercially based and the funding is not in competition with trading banks. The Bank takes into

account the prospects of the applicant and not necessarily the value of security. The Bank has recently introduced a 'Land Form Loans' scheme whereby finance for landforming in irrigation areas is provided in association with advice on design and execution of the project.

#### 14.4.4 Grants

Routine grants for on-farm works associated with salinity control have been provided through the Soil Conservation Authority's scheme of assistance for erosion control works and the Tree Growing Assistance Scheme administered by the State Forest and Lands Service. Grants for special projects have been made available through the National Soil Conservation Program, the National Tree Growing Program and Victoria's 150th Anniversary Fund.

#### 14.4.5 Municipal rate reduction

The extent to which salt-affected land on part of a property is taken into account in the valuation of the property for rating purposes differs between municipalities. Several shire valuers advocated reduced rating for salt-affected land as a means of making available to the owner extra funds with which to pay for salinity control measures.

#### 14.4.6 The Committee's Assessment

Financial Incentives: The Committee believes that financial incentives are justified as a means of encouraging farm-based measures for salinity control.

Concessional loans are generally preferred to grants because loans allow -

- greater flexibility through variation in interest rates and the length of loan period,

- . capital to be repaid with interest and therefore it can be recirculated to assist further landholders,
- . greater administrative control, and opportunity for better assessment of the management ability of the landholder,
- . greater economic efficiency because the applicant must be able to repay the loan.

Loans provided by the Government have the advantage of being available for recycling but the Government must bear the administrative costs. There is therefore justification for an interest rate subsidy scheme in which loans are provided through normal lending institutions but for which the interest rate paid by the farmer is reduced by a Government subsidy.

On the other hand, grants may be justified for the following purposes:

- . to stimulate action by a group of farmers when there would be difficulty in the farmers reaching a cost-sharing agreement,
- . to encourage innovation in salinity control and to support projects that can be used as a special trial or for demonstration purposes,
- . to provide a catalyst for action that will lead to more widespread forms of salinity control.

Penalties: The possible application of taxes as a discouragement to the farmer to undertake activities which may contribute to salinity problems is discussed in Read and Associates (1984). For the reasons given in Section 14.2 of our Report, we do not believe that, at this stage, taxes should be used for that purpose.

Water pricing: A number of submissions to us advocated a rise in the price of irrigation water as an incentive for salinity control. It has been argued that higher prices of irrigation water would encourage

the farmer to introduce water conserving practices which would result in a decreased accession of water to the watertable.

The assumption that there would be a significant effect on the watertable level pre-supposes that the quantity of applied irrigation water which now reaches the watertable is substantially in excess of the minimum quantity required to leach salts from the root zone and that its contribution is significant relative to the other sources of groundwater.

In Section 2.7.2 of this report, we note the lack of reliable field data upon which to base this assumption. Higher prices of irrigation water could encourage pumping of groundwater and recycling of drainage water. These measures could contribute to the control of salinity in some areas. At this stage, a rise in the price of irrigation water cannot be justified solely for the purpose of salinity control.

#### **14.4.7 Proposed incentive schemes**

Special encouragement to the following is warranted in designated areas:

- adoption of preferred salinity control techniques,
- preparation of farm plans,
- formation of group projects,
- innovative approaches to salinity control,
- demonstration projects.

This should be through an extended Salinity Loans Scheme and a Salinity Grants Scheme.

## Extended Salinity Loans Scheme

We propose the introduction of a Salinity Loans Scheme which would be available to farmers in irrigated and non-irrigated regions. The Scheme would make available loans specifically for salinity control measures. The availability of loans at concessional rates should be influenced by:

- the likely contribution that the measures will make towards mitigating salinity problems,
- the participation of the farmer in a group project,
- the extent of farm planning that has been undertaken,
- the ability of the farmer to pay for the measures by other means.

The scheme should be implemented by the Rural Finance Commission using criteria formulated in association with the Salinity Control Board. Adequate provision must be made for agency staff, including the proposed inter-agency field teams, to provide expert advice to the applicant. The initial duration of the scheme should be five years. A nominal level of funding of \$3 million per year is suggested.

## Salinity Grants Scheme

The Salinity Grants Scheme is proposed which would provide grants for the following purposes:

- to offset the cost of farm plans in designated areas,
- to promote group conservation projects,
- to encourage innovation in salinity control,
- to encourage field trials and demonstration projects.

The criteria for the provision of these grants should be established by the Salinity Control Board, taking into account granting schemes which already exist. The criteria should include the provision of adequate monitoring of the proposed project to enable its success to be evaluated.

The funds would be administered by the Salinity Control Bureau and provided directly to the successful applicants or through a functional agency. The initial duration of the scheme should be five years. A notional level of funding is \$1.5 million per year.

#### 14.5 "BUY BACK" SCHEME.

On private land within major ground water intake areas where the only feasible option to reduce recharge is reforestation with native trees "Buy back" and reversion of the area to crown ownership is one option to be considered. "Buy back" offers a number of advantages over other means of encouraging reforestation for salinity control. The advantages are:

- . It provides control over future management of the area, i.e. it avoids problems arising from changes of ownership and unsympathetic future management.
- . It releases landholders from the burden of managing land of low productivity and enables funds to be allocated to more productive areas of land.
- . It establishes a community asset.

The major disadvantages of the "buy back" option are the high initial cost and the long term costs of management of the area.

Consideration must be given to the provision of funds for this purpose. The Committee suggests that a notional amount of \$1 million per year be available for this purpose.

## 14.6 LEVELS OF PUBLIC EXPENDITURE

Past levels of expenditure have been given in Section 5.11. Figure 23 illustrates the notional levels of public expenditure which we believe will be justified in the future. These estimates take into account the following foreseeable requirements, as discussed in previous chapters:

Capital works - Drainage and disposal measures in Northern Victoria, as noted in Chapter 8.

Farm based measures - Provision of financial incentives as noted above.

Extension and education - Augmentation of existing staffing levels and formation of two inter-agency field teams.

Research and investigation - Augmentation of investigation and establishment of Salinity Research Institute.

Planning and administration - Operation of Salinity Control Board and Salinity Control Bureau.

Figure 23 indicates that, while some increase in public expenditure on salinity is necessary, the increase over current expenditure is not expected to be excessive, in real terms. Much can be achieved by more effective use of current resources.

Schedule: The figure also shows that expenditure on research and investigation will be a pre-requisite to the design and implementation of salinity control measures and should be given priority in budget allocation.

## 14.7 SOURCES OF FUNDS

While some public funding will be provided by the State, funds should also be sought directly from the Commonwealth. Most financial aid from the Federal Government for salinity control by the Victorian Government has been as grants under the National Water Resources Program (NWRP), the National Soil Conservation Program, and National Tree Program.

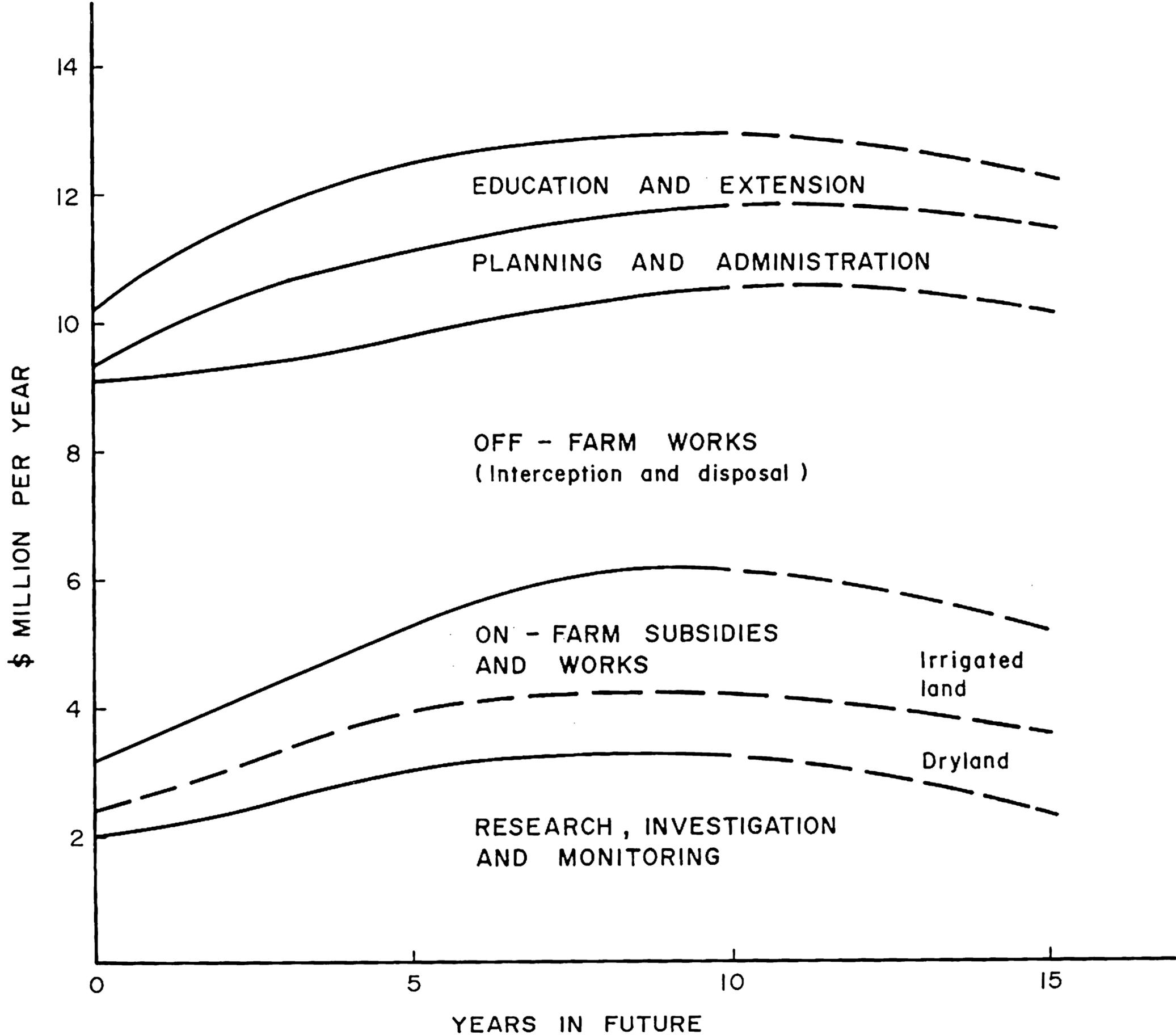


Figure 23. Notional Future Levels of Public Expenditure for Salinity Control

Funding for salinity control under the NWRP involved the provision of funds to a particular State on a dollar-for-dollar basis between the particular State Government and the Federal Government whereas funding under the National Soil Conservation Program involves direct grants. The NWRP has recently been replaced by the Water Resources Assistance Program. These programs have covered only projects which have been considered to be in the national interest.

There have also been minor amounts provided by the Federal Government as occasional grants for small research projects undertaken by the Forests Commission and Soil Conservation Authority. These have been channelled through the Water Resources Foundation and the Reserve Bank.

We do not consider it important that Federal funds come through particular channels but stress that all Federal funding for salinity control should be co-ordinated in such a way that it is allocated to the most efficient forms of salinity control. Further comments on inter-governmental funding are given in Section 15.3.7 of this Report.

#### 14.8 ADMINISTRATION OF FUNDS

We propose the following procedure for administration of Government funds that relate directly to salinity control:

- preparation of an integrated budget by the Salinity Control Board,
- co-ordinated approach through the Board to the Federal Government for funding as appropriate,
- allocation of funds through the Board to each functional agency to finance its salinity programs,
- provision of Salinity Control Loans for farmers through the Rural Finance Commission,
- provision of Salinity Control Grants from the Board through the principal agency and functional agencies.

## 14.9 CONCLUSIONS AND RECOMMENDATIONS

### 14.9.1 Conclusions

- (i) To date farm-based works which may contribute to the control of salinity have been financed largely from farm income and normal sources of credit. Frequently, the motivation for undertaking such works has not been the control of salinity but rather the immediate benefits for farm production.
- (ii) Because many of the current salinity problems are the result of past actions taken in ignorance of their consequences and with the support of the community, an equitable arrangement for salinity control will involve funding by governments.
- (iii) Existing financial incentives for farm-based measures include taxation concessions, concessional loans under the Water Management Loans scheme, the farm improvement provisions of the Rural Adjustment Scheme, the Land Form Loans scheme of the Commonwealth Development Bank, and grants for erosion control works and tree growing. Some augmentation of these is justified.
- (iv) A broader interpretation of the Income Tax Assessment Act is warranted to ensure that investments in specified salinity control techniques are eligible for inclusion as tax deductible items.
- (v) Taxes on specific items are not, at this stage, an appropriate means of discouraging farmers from undertaking activities which may contribute to salinity problems. Nor can a rise in the price of irrigation water be justified solely for the purpose of salinity control.
- (vi) In some circumstances, purchase by the Government of private land that is in a sensitive recharge area will be warranted.

- (vii) Public expenditure on salinity control measures, including capital works, farm-based incentives, a 'buy back' program, extension and education, research and investigation, and planning and administration can justifiably be increased. However, much can be achieved by more effective use of current resources and the necessary increase is not expected to be excessive.
  
- (viii) Funding of salinity control measures by direct allocation from the Federal Government will remain an important source of finance for salinity control and should be sought through a more co-ordinated approach from the State.

#### 14.9.2 Recommendations

- R38. An extended Salinity Loans Scheme should be established for farmers in irrigated and non-irrigated regions. It should operate for an initial period of five years, and be implemented by the Rural Finance Commission using criteria formulated in association with the Salinity Control Board. The availability of loans at concessional rates should take into account the likely contribution that the measures will make towards mitigating salinity problems, the participation of the farmer in a group project, the extent of farm planning that has been undertaken, and the ability of the farmer to pay for the measures by other means.
  
- R39. A Salinity Grants Scheme should be established for an initial period of five years to offset the cost of farm plans in designated areas, to promote group conservation projects, to encourage innovation in salinity control, and to encourage field trials and demonstration projects. The criteria for the provision of the grants should be established by the Salinity Control Board and funds should be administered by the 'principal agency'.

- R40. Provision should be made by the Government for a 'buy back' scheme to enable further purchase of private land located on sensitive groundwater recharge areas.
- R41. Government funding for salinity control in Victoria should be co-ordinated through the Salinity Control Board. The procedure should include the preparation of an integrated budget by the Board, a co-ordinated approach through the Board and the Department of Management and Budget to the Federal Government for funding as appropriate, and the allocation of funds through the Board to each functional agency to finance its salinity program.

CHAPTER FIFTEEN  
INTER-GOVERNMENTAL CO-OPERATION

15.1 INTRODUCTION

Inter-governmental co-operation is vital to the management of salinity. In the following sections the Committee reports on the main incentives for co-operation between State and Federal Governments, the present co-operative arrangements and further opportunities for co-operation. We also comment on the manner in which our recommended arrangements for the organisation and management of salinity control in Victoria should relate to inter-governmental activities.

The Committee sought views on these subjects by releasing for comment a discussion paper on "Inter-governmental Co-operation in Salinity Control" which was prepared for it by Professor S.D. Clark of the Law School, University of Melbourne.

15.2 NEED FOR INTER-GOVERNMENTAL CO-OPERATION

The incentives for co-operation between State Governments in salinity control can be divided into the following three categories:

(1) Activities in one State have consequences for another State

This relationship may be the result of:

- the States sharing a common water catchment and therefore being linked by the river or groundwater system,
- a perception that Government action in one State may lead to similar action by its neighbour, e.g. the introduction of legislation to control the clearing of vegetation may result in pre-emptive clearing across the border,

- . a shared economy such that changes to the pricing of resources, such as water, in one State will influence the economic competitiveness of its neighbour,
- (2) Occurrence of similar types of problems, the management of which can benefit from the sharing of information and expertise,
- (3) The need to indentify and address national priorities

This includes the need for States to co-operate with the Federal Government in determining the manner in which Federal funds will be allocated to each State.

Of particular importance is the location of parts of the States of Victoria, New South Wales, South Australia and Queensland within the Murray-Darling Basin, as shown in Figure 24. In each of these States there is evidence that salinity problems are increasing. As a result, we expect the requirement for co-operative efforts to grow.

## 15.3 PRESENT ARRANGEMENTS

### 15.3.1 River Murray Commission

The principal arrangement for co-operation of the Governments within the Murray Basin is the River Murray Commission. Established in 1917, it consists of four Commissioners representing the Commonwealth, New South Wales, Victoria and South Australia. It is required to investigate and develop proposals for better conservation and regulation of River Murray water resources, and is responsible for the construction and operation of works to regulate the flow of the river for delivery to each State of agreed quantities of water for irrigation and other water supply purposes. In 1984 the new River Murray Waters Agreement was ratified. This gave the Commission new responsibilities in the management of water quality. Specifically the New Agreement empowers the River Murray Commission to:

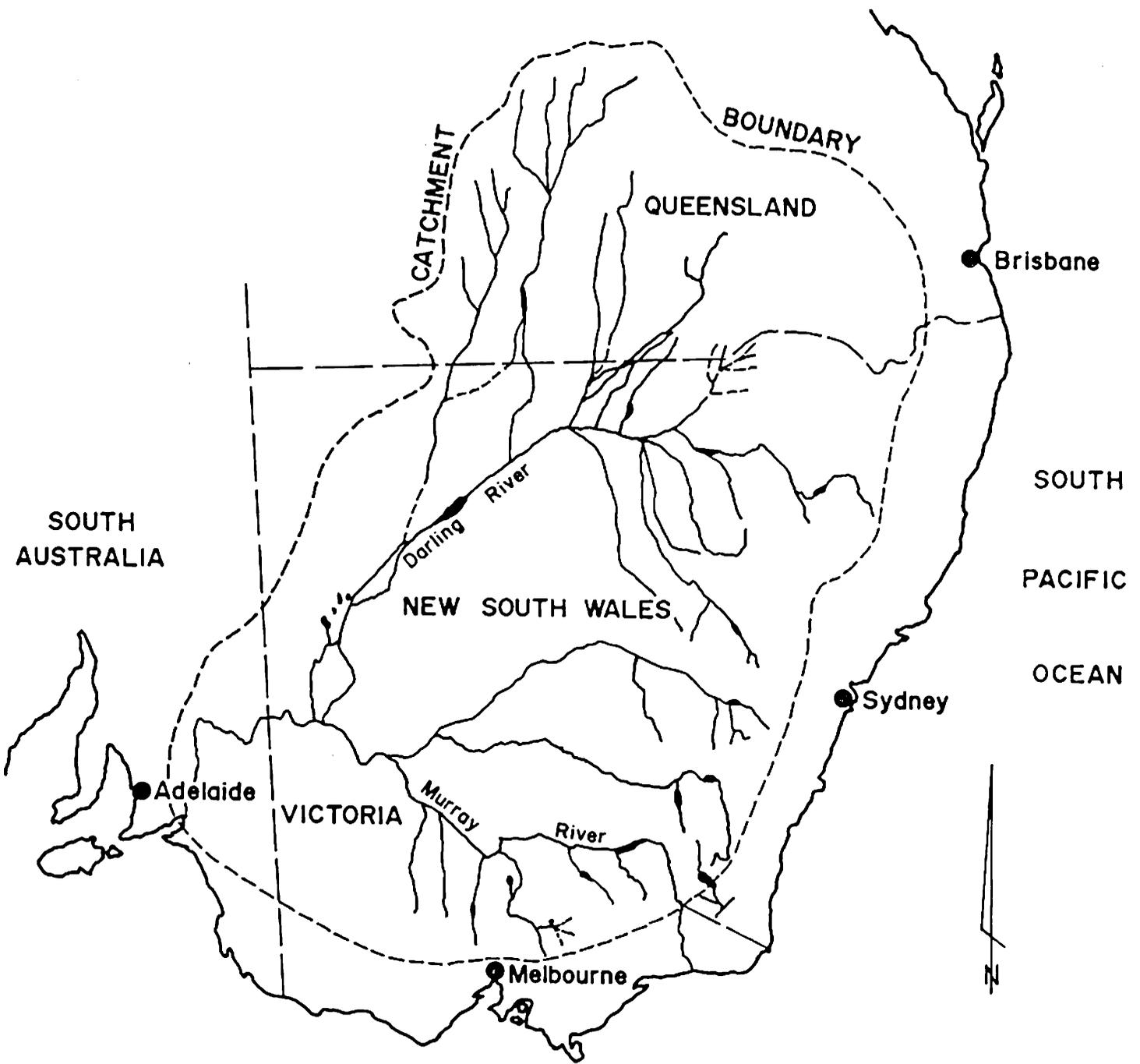


Figure 24. Murray-Darling Catchment

- co-ordinate, or carry out, or cause to be carried out, surveys, investigations and studies regarding the desirability and practicability of works or measures for the protection or improvement of River Murray quality (C1.25),
- initiate proposals for the protection or improvement of River Murray water quality (C1.25),
- establish, maintain and operate an effective and uniform system for measuring and monitoring the quality of River Murray waters (C1.26),
- formulate water quality objectives and, where appropriate, standards for any part of the River Murray, for recommendation to Governments (C1.27),
- make recommendations to Governments or to any authority, agency or tribunal on any matter which may affect the quality of River Murray waters (C1.28),
- have regard to River Murray water quality in determining operational directions for storages under its own control (C1.81),
- adjust the respective rights of the upper States to use water from the River Murray having regard to the quality of their tributary inputs (C1.97),
- determine in what proportions any water released from its storages for dilution purposes shall be debited against the rights of the two upper States, having regard to the quality of their tributary inputs below Albury (C1.83).

The Agreement also requires that any State or authority considering any proposal which may significantly affect the quality of River Murray waters is to inform the Commission of the proposal and provide any additional information the Commission needs to assess the effect on water quality before deciding on the proposal (C1.29).

We have sought the views of the Commonwealth, New South Wales and South Australian Governments, as well as Victorian Government agencies, on the adequacy of these new arrangements. The consensus has been that a period of several years should be allowed to test the New Agreement before any further modifications to the role of the River Murray Commission are considered.

Nevertheless, in examining the capacity of the Commission to coordinate salinity control within the Murray-Darling Basin, the Committee notes the following deficiencies:

- . the jurisdiction of the Commission is restricted to the main stem of the Murray River,
- . the Commission is currently composed of the heads of the States' water management agencies, whereas the principal sources of induced salinity in the River are dispersed activities associated with land management,
- . Queensland, which occupies a significant proportion of the Murray-Darling Basin, is not represented on the Commission,
- . measurement of water quality on tributaries below Albury requires State approval,
- . referral to the Commission of State proposals which could affect water quality is not mandatory,
- . there is an apparent lack of openness in the operations of the Commission which tends to isolate it from the community of the Murray-Darling Basin,

### **15.3.2 Ministerial Councils and supporting Standing and Technical Committees**

The most common inter-governmental fora are Ministerial Councils. These comprise the pertinent Minister from each participating

Government, and are charged with determining mutually acceptable policies, and providing a means of consultation, co-ordination and information exchange. A Council is serviced by a Standing Committee generally comprised of the responsible Departmental Head from each Government. The Committee's functions are to advise the Ministerial Council, and to facilitate consultation and co-ordination between the Governments at a departmental level.

The Council and Standing Committee can then be serviced by technical committees or working parties established at the technical officer level. This formula has been followed in relation to the:

Australian Agricultural Council,  
Australian Environmental Council,  
Australian Forestry Council,  
Australian Minerals and Energy Council,  
Australian Water Resources Council,  
Council of Nature Conservation Ministers,

all of which have functions which may impinge on salinity.

We note that, in the case of salinity management, these Councils suffer from the same problem of co-ordinating their actions as do the individual functional agencies at the State level. This could be overcome effectively if each State had a well-defined salinity control policy which could guide the deliberations of its Ministers in inter-state relations.

### **15.3.3 Research and Investigation**

There are already examples of co-operative research into salinity related subjects. Co-operation between the CSIRO and State Government agencies has taken the form of jointly funded research projects and transfer of research personnel. Of particular relevance to salinity research are the CSIRO Divisions of Groundwater Research, Land and Water Resources, and the Centre for Irrigation Research at Griffith in New South Wales. A specific co-operative

project between the Commonwealth and State Governments is the Joint Commonwealth-State Murray Basin Hydrogeological Project. The aim of the project is to improve the understanding of the groundwater regions of the Basin.

The general subject of research priorities and the responsibility for research into water resources was addressed by a Working Party of the Australian Water Resources Council in 1982 and by the Interim Council of the Institute of Freshwater Studies.

#### **15.3.4 Formal compacts**

Besides the River Murray Waters Agreement, the only formal inter-governmental proposal of relevance to salinity control is the proposed Border Groundwater Agreement between Victoria and South Australia. This Agreement would provide for the sharing and joint management of the groundwater resource in an area along the State border.

#### **15.3.5 Informal exchange of letters**

Informal agreement for co-operation between States can occur through the exchange of letters. This may be an expeditious means of obtaining co-operative action.

#### **15.3.6 National Conservation Strategy**

The development of a National Conservation Strategy occurred through a process of public consultation under the oversight of a committee comprising representatives of State and Commonwealth Governments and non-government organisations. Amongst the twelve major goals of Strategy, the following seven are relevant to salinity control:

- ensure that land which is suitable for many sustainable uses is used in a manner which retains, as far as possible, the greatest number of options for future use,

- ensure that land management practices are consistent with long term productivity of living resources,
- restore degraded and eroded lands,
- ensure that productive agricultural and forestry systems are used on a sustainable basis,
- conserve Australia's ground and surface water resources; and restore and maintain water quality,
- avoid further increases in and, where possible, reduce salinity of soils and water caused by human activities,
- conserve Australia's soil, with the aim of ensuring that soil is not lost or degraded as a consequence of any land management practice.

It is too early to assess the benefits that may result from the Strategy. However, the Committee notes that the forces which lie behind the development and implementation of the National and associated State Conservation Strategies could be mobilised in the cause of salinity control.

### **15.3.7 Funding**

In the previous chapter, we noted the important role of the Commonwealth Government in funding salinity control measures through the Federal Water Resources Assistance Program, the National Soil Conservation Program and the National Tree Program.

Funding for salinity control works by the River Murray Commission involves the provision of funds to the Commission in equal amounts from the Federal Government and the Governments of Victoria, South Australia and New South Wales. The Commission is an appropriate organisation for financing control of salinity which affects more than one State. It is not clear whether the four-way

sharing formula is the best method of reflecting the various State's contribution to salinity problems. A more equitable approach for the funding of projects which involve benefits or costs for more than one State might be to share the funding of particular projects on the basis of the distribution of costs and benefits between the three States. However, all States would need to agree on who should share costs. To negotiate sharing arrangements for each individual project may not be cost effective. The Committee therefore accepts that the existing division of funding is reasonable for the foreseeable future.

There may also be an argument for a State which accepts salt loads from upstream of its borders to receive compensation from other Governments. This may be the most economically efficient solution in a situation where the cost of damage caused by a certain amount of downstream salinity is less than the cost of controlling the input upstream. While the current lack of knowledge of the relationship between the cause and effects of salinity may make such a system impracticable at present, it should be given further consideration in the future.

## 15.4 FURTHER OPPORTUNITIES FOR CO-OPERATIVE EFFORTS

### 15.4.1 **General**

The Committee believes that, while the existing arrangements as described in the previous section already represent a substantial response to the incentives for inter-governmental co-operation described in Section 15.2, the following initiatives could improve the management of the Murray-Darling Basin, and use the available expertise and resources more effectively.

### 15.4.2 **Catchment co-ordination**

Extension of the role of the River Murray Commission: A new catchment authority does not appear warranted at this stage. Instead, consideration should be given to extending the role of the River Murray Commission such that:

- . the land management agencies of the Commonwealth and States can contribute more effectively to the deliberations,
- . Queensland is represented, at least as an observer, on the Commission,
- . the Commission has the power to obtain data from the States on the physical characteristics of their land and water resources,
- . all State proposals which may significantly affect the conditions of the Murray River must be referred to the Commission,
- . there is a greater opportunity for the community of the Murray-Darling Basin to participate directly in the deliberations of the Commission.

Formation of Murray-Darling Basin Forum: There is a lack of opportunity for the occupants of the Basin to contribute to the formulation of policies for its management. An initial step towards this aim and a means of helping people to understand the implications of being part of the same catchment, would be the formation of a Basin-wide community forum. The Forum should be composed of representatives from government and non-government organisations. Its functions would include the dissemination of information and preparation of policy proposals. It could also review policy proposals of the River Murray Commission and appoint representatives to participate in the meetings of the Commission. One means of creating the Forum would be through an expansion of the role of the present Murray Valley League for Development and Conservation.

Joint Strategy Development: The Victorian Government cannot develop its strategy for salinity control in Northern Victoria in isolation from other States. The Victorian Strategy must be linked to corresponding strategies for the other States which should link together to create an integrated Basin-wide strategy. The Victorian

Government should urge, through the River Murray Commission, the Governments of South Australia and New South Wales to develop and co-ordinate salinity control strategies.

Central Data Base: A comprehensive collection of data on the characteristics of the land and water resources of the Murray Basin should be established. It could be located within a Division of the CSIRO or in the River Murray Commission.

#### 15.4.3 Co-operative Research and Investigation

Saline Waste Disposal: Opportunities for co-operative schemes by which saline wastes can be disposed should be examined by the River Murray Commission as a matter of priority. Such schemes should include river dilution strategies and jointly operated transportation or piping of salt to markets, or the sea.

General: The South Australian Engineering and Water Supply Department and South Australian Department of Agriculture indicated to the Committee that they would welcome joint research projects with Victoria into a number of topics including:

- techniques of saline waste disposal,
- integration of water and land use planning,
- development of water quality criteria,
- economic and legal aspects,
- public health,
- measurement of the response of crops to salinity,
- efficient use of irrigation water.

Similar topics of common interest would also be relevant to New South Wales, Queensland and Western Australia. Co-operation could take the form of transfer of research staff, sharing of research facilities and contracting of research by one State to an institute in another State.



The River Murray

Co-ordination of Research: Just as we have recommended for Victoria that a salinity research strategy be established as part of an overall salinity control strategy, so the parallel approach should be taken at the national level. A national strategy for salinity research would then guide the allocation of funds for research. The Committee would expect the responsibility for such a strategy to be given to an appropriate body at the Federal level.

**15.4.4 Education and training:** Again the similarity in salinity problems of various States should be recognised and educational and training material and expertise shared.

## 15.5 RELATIONSHIP TO VICTORIAN ADMINISTRATIVE ARRANGEMENTS

The recommended arrangements for the organisation and management of salinity control in Victoria will contribute to inter-governmental relations. They will ensure that the State has a set of integrated objectives and policies for salinity control and that there is a well-defined allocation of responsibilities. Participants from Victoria in inter-governmental activities will therefore be able to draw upon and point to an integrated approach by the State to the problem.

In the case of the River Murray Commission, the Committee would expect Victoria's representative to be a member of the State Salinity Control Board and to provide the link between corresponding strategy development at the State and inter-governmental levels.

## 15.6 CONCLUSIONS AND RECOMMENDATIONS

### 15.6.1 Conclusions

- (1) Co-operation between the Victorian Government and the Governments of other States and the Commonwealth is important for salinity control because:

- . Victoria shares the Murray-Darling Basin with other States,
  - . the management of similar types of problems in each State can benefit from the sharing of information and expertise, and
  - . there is a need to identify and address national priorities.
- (2) Already there is substantial routine co-operation through the River Murray Waters Agreement, through Ministerial Councils and their supporting committees and through joint research projects.
- (3) The establishment of a new catchment authority for the Murray-Darling Basin is not warranted at this stage. However, management of the Murray-Darling Basin could be improved by:
- . extending the role of the River Murray Commission,
  - . forming a Murray-Darling Basin Forum of representatives from government and non-government organisations to disseminate information, prepare policy proposals, and contribute to the deliberations of the River Murray Commission,
  - . developing salinity control strategies by all States in the Murray-Darling Basin,
  - . establishing a comprehensive collection of data on the land and water resources of the Basin.
- (4) Funding of salinity control projects through the Federal Government or River Murray Commission represents an aspect of co-operation. Direct funding between States in compen-

sation for damage by salinity may be advantageous in the future when knowledge of the mechanisms of salinity are better known.

- (5) Co-operative research and investigation into a joint strategy for the disposal of saline waste is warranted.
- (6) Further joint research projects between Victorian agencies and those of other States would be advantageous and could involve the exchange of research staff, sharing of research facilities and contracting of research by one State to an institute in another State.
- (7) The development of national priorities for salinity research must be linked to a salinity control strategy for the Murray-Darling Basin.

#### 15.6.2 Recommendations

- R42. The Victorian Government should explore with the Governments of neighbouring States and the Commonwealth the means whereby the deficiencies of the River Murray Waters Agreement as a mechanism for co-operative management of the Murray-Darling Basin could be overcome.
- R43. The Victorian Government should seek an expansion of the role of the River Murray Commission such that:
- . land management agencies can contribute more effectively to its deliberations,
  - . Queensland is represented at its meetings,
  - . it has the capacity to require member States to provide information on relevant characteristics of their land and water resources,

- member States are required to notify it of any sections which may affect the water quality of the River Murray,
    - representatives of the community in the Murray-Darling Basin can participate in the meetings of the Commission.
- R44. The Victorian Government should encourage the Federal Government to establish and support a Murray Basin Forum to be composed of representatives from government and non-government organisations.
- R45. The Victorian Government should seek the responses of the New South Wales, South Australian and Federal Governments and the River Murray Commission, to the Committee's Strategic Study on Salinity Control in Northern Victoria as a basis for the further development of a salinity control strategy for Northern Victoria. It should also urge the River Murray Commission and the neighbouring States to develop and co-ordinate similar types of strategies for the management of land and water salinity.
- R46. The River Murray Commission should be requested to establish and maintain a comprehensive collection of data on the characteristics of the land and water resources of the Murray-Darling Basin..
- R47. A joint strategy for the disposal of saline wastes in a sustainable manner should be established by the River Murray Commission as a matter of priority.
- R48. The development of a Victorian strategy for salinity research should take into account and promote the opportunities for joint research between Victoria and other States.

R49. Consideration should be given to the opportunities for the use of common educational material on salinity by States and the establishment of common training programs for government staff and landholders involved in salinity control.



APPENDICES



APPOINTMENT OF COMMITTEE MEMBERS  
EXTRACTS FROM MINUTES OF PROCEEDINGS  
LEGISLATIVE COUNCIL & LEGISLATIVE ASSEMBLY

EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF THE  
LEGISLATIVE COUNCIL

FRIDAY, 2 JULY, 1982

- 37 SALINITY COMMITTEE - The Honourable W.A. Landeryou moved, by leave, that the Honourables L.A. McArthur and J.W.S. Radford be members of the Salinity Committee.

Question - put and resolved in the affirmative.

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EXTRACTED FROM THE VOTES AND PROCEEDINGS OF THE  
LEGISLATIVE ASSEMBLY

THURSDAY, 1 JULY, 1982

- 37 COMMITTEE APPOINTMENTS - Motion made, by leave, and question - That, contingent upon the Legislative Council concurring with the Resolutions of this House dated 1 July, 1982 establishing the respective Committees -
- (a) Mr. Fogarty, Mr. Hann, Mr. Stirling and Mr. Wood be appointed members of the Salinity Committee.

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TUESDAY, 24 MAY, 1983

- 14 SALINITY COMMITTEE - Motion made, by leave, and question - That Mr. Ramsay be appointed a member of the Salinity Committee (Mr. Fordham) - put and agreed to.

TUESDAY, 6 MARCH, 1984

- 6 SALINITY COMMITTEE - Motion made, by leave, and question - That Mr. Ramsay be discharged from attendance on the Salinity Committee and that Mr. Dickinson be appointed in his stead (Mr. Fordham) put and agreed to.

Mr. Wood resigned from the Legislative Assembly on 29 March, 1983.



ON-SITE INSPECTIONS MADE BY THE COMMITTEEVICTORIA**KERANG**

Water Commission tile drainage experimental area.  
 Kerang Agricultural Research Farm.  
 Laser control land layout and water re-use systems.  
 Barr Creek and its catchment areas.  
 Water Commission pumping station.  
 Mineral Reserve Basins area.  
 Lake Charm and Cullens Lake.

**SHEPPARTON**

Ardmona Main Drain and Mosquitá Depression.  
 Water Commission groundwater extraction unit.  
 Tatura Irrigation Research Institute.  
 Tongala Groundwater Group Scheme.  
 Girgarre Area.

**SWAN HILL**

Tour of Mallee and Maryborough areas.

**BENDIGO**

Timor, Burke's Flats, Kamarooka and Colbinabbin.

**BENALLA (Aerial Tour)****WESTERN DISTRICT**

Basalt Plains and Nanapundah areas.  
 Mirrunatwa Valley.  
 Dundas Tablelands.

## WESTERN AUSTRALIA

Irrigation districts south of Perth.  
Wellington Reservoir.  
Collie Catchment.  
Lemon Catchment.  
Tree planting and agronomic projects in the Narrogin Region.  
Culballing Catchment.  
C.S.I.R.O. - East Popanyinning plantation.  
Dangin - investigation of interceptor banks.

## SOUTH AUSTRALIA

Waikerie and Loxton irrigation areas.  
Berri and Renmark irrigation areas including Berri and Dishers Creek  
evaporation basins and salinity control works.  
Aerial inspection of the Noosa Evaporation basin, Riverland Irrigation  
Areas, Lower Murray Irrigation Areas, Lower Lakes Murray Mouth.

## NEW SOUTH WALES

Berriquin Irrigation Districts.  
Wakool/Tullakool groundwater drainage and salt harvesting scheme.  
Murrumbidgee irrigation areas.

LIST OF WITNESSES

Mr. E. Adamson, Australian Conservation Foundation  
 Dr. A. Akbarzadeh, Solar Energy Council  
 Mr. W. Allen, Glenthompson  
 Mr. C. Baker, Concrete Pipes (Aust) Pty Ltd  
 Mr. R. Ball, Shire of Korong  
 Mr. S. Banfield, Loddon Campaspe Regional Planning Authority  
 Mr. N. Barr, University of Melbourne.  
 Mr. J. Bayles, Environment Protection Authority  
 Mr. N. Beattie, Little Lake Boort Restoration Committee  
 Mr. N. Bennett, Shire of Swan Hill  
 Dr. Bokhari, International Commission on Irrigation and Drainage  
 Cr. R. Brasher, Shire of Deakin  
 Mr. D. Brewin, Soil Conservation Authority  
 Mr. P. Brown, Victorian Field and Game Association  
 Dr. P. Brown, Montana State University, USA  
 Dr. M. Buxton, Ministry for Planning and Environment  
 Mr. D. Cahill, Soil Conservation Authority  
 Dr. R. Campbell, Department of Conservation Forests and Lands  
 Mr. J. Cary, University of Melbourne.  
 Dr. D. Chalmers, Tatura Irrigation Research Institute  
 Mr. F. Charles, James Hardie & Coy Pty Ltd  
 Mr. A. Coad, Murray Valley League  
 Mr. K. Collett, Rural Water Commission  
 Mr. V. Collier, Farmer, Stanhope  
 Cr. R. Comini, Loddon Campaspe Regional Planning Authority  
 Mr. D. Constable, Rural Water Commission  
 Mr. J. Cook, Campaspe Salinity Action Group  
 Mr. W. Cook, Cheetham Salt Ltd  
 Mr. L. Crofts, Australian Natives Association  
 Mr. G. David, Campaspe Valley Farm Trees Association  
 Mr. K. Davis, Warrenbayne/Boho Landholders Group  
 Mr. C. Davies, Warrenbayne/Boho Landholders Group  
 Mr. R. Davies, Swan Hill Branch, Australian Labor Party  
 Mr. L. Denbroke, Campaspe Salinity Action Group

Mr. B. Dexter, Forests Commission  
Mr. D. Dole, Rural Water Commission  
Mr. G. Douglas, Natural Resources Conservation League  
Mr. W. Dunk, Ministry for Planning and Environment  
Cr. A. Economou, Shire of Violet Town  
Cr. I. Elder, Shire of Charlton  
Mr. M. Fehring, Cohuna  
Mr. C. Fenton, West of Loddon Salinity Action Committee  
Mr. R. Ferguson, Shire of Dimboola  
Mr. P. Fisher, Casterton Branch, Victorian Farmers & Graziers Association  
Mr. O. Fox, Ultima District Dryland Farmers Protection League  
Mr. A. Grant, Murray Valley League  
Cr. M. Grant, Shire of Violet Town  
Mr. R. Grant, Nangiloc/Colignan Drainage Committee  
Mr. F. Gibbons, Soil Conservation Authority  
Mr. J. Gittins, ACIL Australia Pty Ltd  
Mr. T. Glazebrook, Road Construction Authority  
Mr. T. Green, Garden and Green, Solicitors  
Dr. P. Greig, Forests Commission  
Mr. L. Grey, Swan Hill  
Cr. G. Haines, Loddon Campaspe Regional Planning Authority  
Mr. G. Hall, Little Lake Boort Restoration Committee  
Mr. P. Hallows, Institution of Engineers, Victorian Division  
Mr. N. Hansen, Shire of Charlton  
Cr. H. Haw, Shire of Deakin  
Mr. R. Hercott, Wimmera Mallee Pipeline Committee  
Mr. R. Hicks, Humes Limited  
Mr. D. Hill, Australian Conservation Foundation  
Mr. D. Hill, Department of Conservation, Forests and Lands  
Mr. A. Hodgson, Forests Commission  
Mr. S. Howell, Warrenbayne/Boho Landholders Group  
Cr. K. Inglis, West of Loddon Salinity Action Group  
Mr. E. Jackson, Catchment Education Trust  
Mr. J. Jackson, Maroona  
Mr. K. James, Eastern Mallee District, Victorian Farmers & Graziers Association

Dr. J. Jenkin, Soil Conservation Authority  
Mr. G. Jones, Department of Agriculture  
Mr. I. Keens, Victorian Almond Growers Committee  
Mr. B. Kelleher, Australian Natives Association  
Mr. P. Kenley, Department of Minerals and Energy  
Mr. B. Kernow, Department of Agriculture  
Mr. J. Kilpatrick, Great Western  
Mr. P. King, ACIL Australia Pty Ltd  
Mr. J. Kyle, Shire of Violet Town  
Mr. J. Lambert, Kerang  
Cr. J. Larkin, Shire of Swan Hill  
Mr. G. Lawrence, G.V. Lawrence & Associates  
Mr. N. Lawrance, Balmoral  
Dr. C. Lawrence, Department of Minerals and Energy  
Mr. D. Leeming, Shire of Dundas  
Mr. G. LeMoyne, International Commission on Irrigation and Drainage  
Mr. T. Lowe, West of Loddon Salinity Action Committee  
Mr. D. Luke, Soil Conservation Authority  
Mr. C. Lyle, Tatura Irrigation Research Institute  
Mr. P. Lyons, Balmoral  
Mr. G. Macartney, Goulburn Valley Regional Employment Development Board  
Dr. I. MacBean, Bendigo College of Advanced Education  
Mr. G. MacKay, Manangatang Branch, Victorian Farmers & Graziers Association  
Dr. P. Macumber, Department of Minerals and Energy  
Mr. I. Mansell, Nangiloc/Colignan Drainage Committee  
Mr. D. Marrows, Sunraysia & Riverland Committee on Salinity  
Mr. T. Martin, Lindsay Point Almonds  
Mr. W. Martin, Benalla  
Mr. E. Merrigan, Goulburn Irrigation Region Drainage Action Committee  
Mr. I. Mitchener, Shire of Swan Hill  
Mr. N. Mitchelmore, Goulburn Irrigation Region Drainage Action Committee  
Dr. J. Morris, Forests Commission  
Mr. D. Murphy, Glenelg District Advisory Committee, Soil Conservation  
Authority  
Mr. B. McCahon, Paradise Creek

Mr. R. McCann, Pipe the Salt Committee  
Cr. R. McClelland, Sea Lake  
Mr. B. McConchie, Department of Agriculture  
Mr. D. McFarlane, Lake Charm Restoration Committee  
Mr. M. McLean, Rural Water Commission  
Mr. D. McMillan, Sunraysia & Riverland Committee on Salinity  
Mr. A. McNicol, Manangatang Branch, Victorian Farmers & Graziers Association  
Mr. N. Nicholson, Maryborough  
Mr. N. Noelker, Shire of Swan Hill  
Mr. I. Norman, Department of Agriculture  
Mrs. N. Oates, Loddon Campaspe Revegetation Project  
Mr. F. Orton, Sunraysia & Riverland Committee on Salinity  
Mr. W. Papst, Soil Conservation Authority  
Mr. W. Parker, Humes Concrete Pty Ltd  
Dr. J. Paterson, Department of Water Resources  
Mr. A. Patterson, Department of Agriculture  
Mr. T. Patton, Department of Agriculture  
Mr. B. Pearl, Shire of Deakin  
Mr. S. Pickering, Millewa Branch, Victorian Farmers & Graziers Association  
Mr. K. Porter, Shire of Dundas  
Mr. P. Prasat, International Commission on Irrigation and Drainage  
Mr. M. Read, Michael Read and Associates  
Mr. J. Regan, Shire of Deakin  
The Hon. B. Reid, MLC  
Mr. R. Rendell, Rural Water Commission  
Mr. K. Ritchie, Forest Extension Officer, Forests Commission  
Mr. H. Robertson, Millewa Branch, Victorian Farmers & Graziers Association  
Cr. P. Robinson, Shire of Violet Town  
Mr. G. Rooney, Environment Protection Authority  
Mr. G. Ruchel, Millewa Branch, Victorian Farmers & Graziers Association  
Mr. & Mrs. M. Ryan, Dookie  
Cr. F. Sanderson, Shire of Charlton  
Mr. D. Seacombe, Soil Conservation Authority  
Mr. S. Sims, Lake Charm Restoration Committee  
Cr. K. Sleep, Shire of Dimboola

Mr. J. Smith, Girgarre Salinity Group  
Mr. M. Smith, Rural Finance Commission  
Mr. N. Smith, Warrenbayne/Boho Landholders Group  
Mr. T. Speedie, Soil Conservation Authority  
Dr. D. Spencer Jones, Department of Minerals & Energy  
Mr. M. Stahmer, Humes Plastics Pty Ltd  
Mr. C. Spowart, Kerang Irrigation Region Salinity Action Committee  
Mr. R. Stanton, Swan Hill Branch, Australian Labor Party  
Mr. F. Stokes, Institution of Engineers, Victorian Division  
Mrs. S. Stone, Rural Sociologist  
Mr. F. Taylor, Girgarre Salinity Group  
Mr. R. Taylor, Department of Agriculture  
Ms. A. Teese, Carisbrook  
Mr. D. Thomas, Victorian Field & Game Association  
Mr. C. Thomson, Sunraysia & Riverland Committee on Salinity  
Cr. R. Thomson, Shire of Deakin  
Mr. R. Threadgold, Tresco  
Mr. S. Tickell, Department of Minerals and Energy  
Mr. J. Treacy, West of Loddon Salinity Action Group  
Mr. W. Trehella, Rural Water Commission  
Cr. E. Tuohey, Shire of Waranga  
Mr. D. Turner, Mildura Regional Library Service  
Miss. L. Turner, Mildura Regional Library Service  
Mr. H. Vegter, Shire of Deakin  
Mr. G. Vines, Geelong Waterworks & Sewerage Trust  
Mr. K. Vivian, Manangatang Branch, Victorian Farmers & Graziers Association  
Mr. I. Voigt, Soil Conservation Authority  
Cr. J. Wall, Shire of Violet Town  
Mr. R. Ward, Shire of Avoca  
Mr. D. Wauchope, Goulburn Regional Consultative Council  
Mr. A. Webster, Rural Water Commission  
Mr. G. Weller, Campaspe Valley Farm Trees Association  
Mr. G. Wellington, Campaspe Salinity Action Group  
Mr. K. White, Steel Mains Pty Ltd  
Mr. T. White, Loddon Campaspe Revegetation Project

Dr. R. Wildes, Tatura Irrigation Research Institute, Department of Agriculture

Dr. R. Williamson, Department of Minerals and Energy

Mr. G. Winderlich, Ultima

Mr. L. Woods, Commonwealth Development Bank

Mrs. S. Wright, Australian Natives Association.

## LIST OF OTHER SUBMISSIONS

Mr. S. Antonelli, Environment Protection Authority  
Mr. K. Amanatides, Australian Bureau of Statistics  
Mr. B. Beilby, Department of the Premier and Cabinet  
Mr. D. Bibby, Donald  
The Hon. F. Blevins, M.L.C., Minister for Agriculture, South Australia.  
Mr. G. Brouwer, Department of the Premier and Cabinet  
Mr. J. Burge, Morwell  
Mr. G. Camac, Narrung, South Australia  
Mr. H. Chalmers, Pyramid Hill  
Cockajemmy, Pty. Ltd., Melbourne  
Mr. T. Copping, Victorian Farmers & Graziers Association  
Mr. B. Cossar, Natte Yallock  
Mr. J. Cramsie, Department of Minerals and Energy  
The Hon. J. Crozio, M.B.F., M.P., Minister for Natural Resources, N.S.W.  
Mr. K. Cumming, Department of Agriculture, Hamilton  
Mr. J. Dyer, Shire of Kerang  
Mr. F. East, Bendigo  
Mr. G. Echberg, Highett  
Mr. G. Echlaug, Horticultural Conservation  
Mr. J. Fdey, Red Cliffs  
Mr. F. Falk, Department of Industry, Commerce and Technology  
Mr. C. Finlay, Shire of Bannockburn  
Mr. G. Ford, Willaura  
Mr. J. Gallacher, Bealiba  
Mr. M. Gerrish, Australian Institute of Agricultural Science  
Mr. J. Guiliano, Health Commission  
Messrs. J. & D. Greene, Elmhurst  
Mr. L. Hall, Kerang  
Mr. K. Hardeflot, Talbot  
Mr. G. Hardwick, Kerang  
Mr. D. Haslam, Deniliquin  
Cr. D. Hickey, Shire of Bet Bet

Mr. G. Hogbin, Monash University  
Mr G. Holden, Stawell  
Mr. D. Ince, North Central TAFE Centre  
Mr. K. Jackel, Shire of Rochester  
Mr. L. Jones, Road Construction Authority  
Mr. J. Kerr, Shire of Bet Bet  
Mr. N. Kruger, Antwerp  
Mr. K. Lewis, Department of Engineering & Water Supply, South Australia.  
Mr. L. Longworth, Soil Conservation Service, New South Wales  
Mr. A. Lubke, Lower Broken Creek Pumpers Association  
Mr. R. Luff, Victorian College of Agriculture & Horticulture  
Mr. A. MacDonald, Shire of Nathalia  
Ms. H. Martin, Australian Conservation Foundation  
Mr. R. Martin, Loddon Campaspe Region Planning Authority  
Mr. A. Mathews, Moonambel  
Mr. W. Meyer, CSIRO, New South Wales  
Dr. D. Mitchell, CSIRO, New South Wales  
Mr. P. Moore, Murray Valley League, South Australia  
Mr. J. Murphy, Victorian Irrigation Research & Advisory Services Committee  
Mr. D. McArthur, Mirranatwa  
Mr. J. McColl, Department of Agriculture, South Australia  
Dr. W. McCullagh, Williamstown  
Mr. B. McKissack, Victorian Field and Game Association  
Mr. M. McLaughlin, Department of Agriculture  
Dr. G. Newman, Department of Conservation, Forests and Lands  
Mr. T. O'Brien, River Murray Commission  
Mr. E. Orton, Nangiloc  
Mr. R. Peck, Forests Commission, New South Wales  
Mr. G. Pentland, Local Government Department  
Mr. E. Phipps, Department of Environment and Planning, South Australia.  
Mr. F. Pitt, Jeparit  
Mr. B. Raggat, Marnoo  
Mr. K. Read, Goornong  
Cr. P. Robins, Victorian Irrigation Research & Promotion Organisation

Mr. M. Richards, Rushworth  
Mr. A. Richardson, Kerang  
Mr. D. Ross, Natte Yallock  
Mr. T. Rudkins, Shire of East Loddon  
Mr. H. Schwedes, Lexton  
Dr. B. Scoggins, Howard Florey Institute for Medical Research  
Dr. P. Sheehan, Department of Management and Budget  
Shire of Kerang  
Shire of Violet Town  
Mr. J. Shovelton, Kiewa Catchment and Farm Trees Group  
Mr. C. Silke, Ballarat  
Mr. K. Sinnot, Boort  
The Hon. J. Slater, M.P., Minister for Water Resources, South Australia  
Mr. D. Smith, Department of Agriculture  
Mr. L. Smith, Loxton  
Mr. G. Spencer, Nyah Irrigation District Advisory Board  
Mr. A. Thatcher, Garden State Committee  
Mr. D. Thomas, Kerang Regional Development Association  
Torrumbarry System Irrigators Association  
Victorian Field & Game Association  
Victorian Solar Energy Council  
Senator The Hon. P. Walsh, Federal Minister for Resources & Energy  
Mr. N. Weir, Bealiba  
Mr. G. Willey, Mansfield  
Mr. J. Wright, Ministry of Planning and Environment  
Mr. D. Yencken, Ministry of Planning and Environment  
Mr. R. Youl, Department of Conservation, Forests and Lands.



REPORTS AND DISCUSSION PAPERS PUBLISHED  
BY THE SALINITY COMMITTEE

- \* Progress Report on the Barr Creek Catchment, Mineral Reserve Basins and Lake Tyrell Schemes. First Report to Parliament of the Salinity Committee (December, 1982).
  
- \* The Activities of the Salinity Committee. Second Report to Parliament of the Salinity Committee (October, 1983).
  
- \* Causes, Extent and Effects of Salinity in Victoria. A report by ACIL Australia Pty. Ltd. in association with Australian Groundwater Consultants Pty. Ltd., Gutteridge Haskins and Davey Pty. Ltd., and Melbourne University School of Agriculture and Forestry (November, 1983).
  
- \* The Application of Salinity Control Techniques in Victoria. A report by Gutteridge Haskins and Davey Pty. Ltd. in association with Australian Groundwater Consultants Pty. Ltd., ACIL Australia Pty. Ltd. and Melbourne University School of Agriculture and Forestry (November, 1983).
  
- \* Inter-Governmental Co-operation in Salinity Control. A discussion paper by Professor Sandford D. Clark (March, 1984).
  
- \* Financing Salinity Control in Victoria. A discussion paper by Michael Read and Associates (March, 1984).
  
- \* The Organisation and Management of Salinity Control in Victoria. A discussion paper by M. Mackay and Associates (March, 1984).
  
- \* Irrigation and Groundwater Accessions. A report by Professor T.A. McMahon on the proceedings of a technical seminar (June, 1984).
  
- \* Salinity Control in Northern Victoria. A strategic study for the Salinity Committee of the Victorian Parliament by Dwyer Leslie Pty. Ltd. in association with Maunsell & Partners Pty. Ltd., and a Specialist Group from Departments of the Government of Victoria (September, 1984).

MEMBERSHIP OF ADVISORY GROUPS  
RESEARCH ADVISORY GROUP

Dr. R.G. Downes (Chairman)	Consultant	
Professor S.D Clark	Professor of Law	University of Melbourne
Dr. R. Dumsday (to September, 1986)	School of Agriculture	La Trobe University
Mr. N. Lawrance	Dryland Farmer	Balmoral, Victoria
Professor A. Lloyd	Professor of Agricultural Economics	University of Melbourne
Professot T. McMahon	Professor of Agricultural Engineering	University of Melbourne
Dr. A.J. Peck	Principal Research Scientist	Division of Groundwater Research, CSIRO, Western Australia
Mr. R. Smith	Irrigation Farmer	Kerang, Victoria
Mrs. S. Stone	Rural Sociologist	Victoria

DEPARTMENTAL SALINITY LIAISON COMMITTEE

Mr. D. Cahill	Deputy Chairman	Soil Conservation Authority
Mr. K. Collett	Senior Designing Engineer	Rural Water Commission
Mr. J. Cornish (from June, 1984)	Irrigation Agronomist	Department of Agriculture
Mr. B. Dexter	Chief Silvicultural Officer	Forests Commission
Mr. P. Holbeach	Chief Planning & Assessment Officer	Fisheries & Wildlife Service
Dr. J. Langford	Leader, State Water Plan	Department of Water Resources
Dr. C. Lawrence	Supervising Geologist Groundwater Branch	Department of Minerals and Fnergy
Mr. D. Monahan	Principal Water Quality Officer	Environment Protection Authority
Mr. I. Norman (to June, 1984)	Salinity Co-ordinator	Department of Agriculture

STRATEGIC STUDY OF SALINITY CONTROL  
IN NORTHERN VICTORIA

STUDY TEAM

Full-Time

Mr. D. Leslie (Co-ordinator)	Dwyer Leslie Pty. Ltd.
Mr. C. Lyle	Department of Agriculture
Dr. P. Macumber	Department of Minerals and Energy
Mr. D. Monahan	Environment Protection Authority
Mr. K. Sampson	Department of Agriculture
Mr. W. Trehwella	Rural Water Commission

Part-Time

Mr. D. Luke	Land Protection Service (Soil Conservation Authority)
Mr. K. Martin	Dwyer Leslie Pty. Ltd.
Mr. D. MacLeod	Maunsell & Partners Pty. Ltd.
Mr. D. Oldfield	Maunsell & Partners Pty. Ltd.

Specialist Review

Dr. T. Bellair	Environmental Science Associates
Mr. T. Lane	Australian Hydrogeologists International Pty. Ltd.
Dr. J. Loveday	CSIRO Division of Soils

## STEERING COMMITTEE

## Members of Salinity Committee, and:

Dr. R. Campbell	Director, Land Protection Service, Department of Conservation Forests and Lands
Mr. D. Constable	General Manager, Rural Water Commission
Mr. M. Flemming/Dr. B. Williams	Division of Water and Land Resources, CSIRO
Mr. G. Hunter	Director of Research, Salinity Committee
Professor A. Lloyd	School of Agriculture and Forestry, University of Melbourne
Dr. J. Langford	Leader, State Water Plan, Department of Water Resources
Mr. R. Taylor	Assistant Director-General, Department of Agriculture

## Consultative Group

Mr. H. Bertsch/ Mr. J. Forest	Pipe the Salt Committee
Cr. A. Cameron Mr. P. Wharten	Sunraysia and Riverland Committee on Salinity
Mr. P. Cole	Department of Agriculture, South Australia
Mr. S. Flint	Water Resources Commission, New South Wales
Mr. D. Goode	Australian Conservation Foundation
Mr. A. Grant	Murray Valley League
Cr. K. Inglis	Kerang Irrigation Region Salinity Action Committee
Mr. K. Johnson	River Murray Commission
Mr. I. Laing	Engineering & Water Supply Department South Australia

**Consultative Group (Cont.)**

Mr. F. Merrigan or  
Mr. L. Heath

Goulburn Irrigation Region Drainage  
Action Committee

Mr. D. Thomas

Conservation Council of Victoria

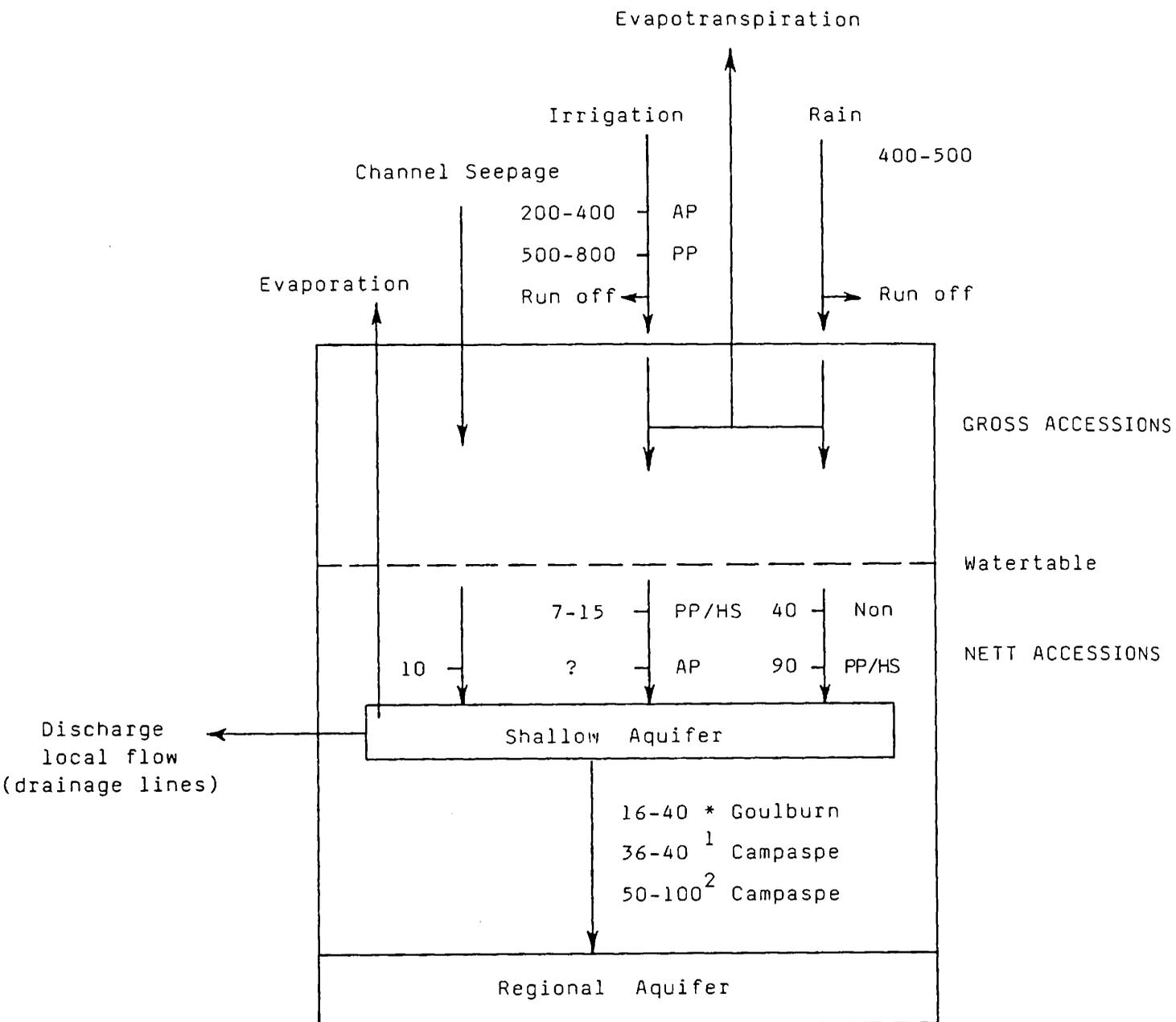
Mr. G. Weller

Victorian Farmers & Graziers  
Association



WATER BUDGETS FOR IRRIGATION REGIONS

Extracts from Irrigation and Groundwater Accessions, a report prepared by Professor T.A. McMahon, for the Salinity Committee of the Victorian Parliament on the Proceedings of a Technical Seminar (June, 1984).

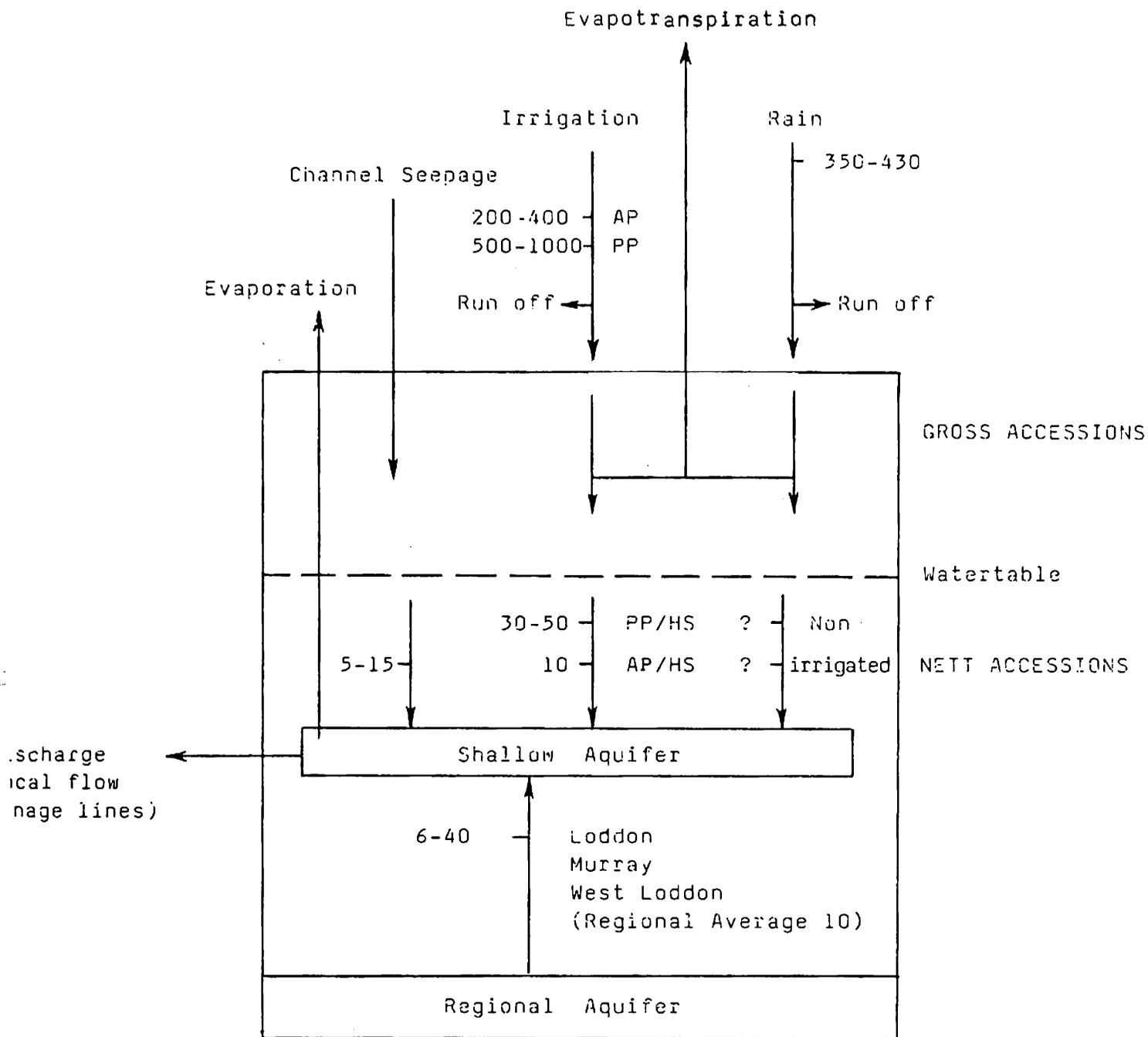


Footnotes

- |   |   |
|---|---|
| A.P. : Annual Pasture                   | * Regional Range - irrigated and non-irrigated              |
| P.P. : Perennial Pasture                | <sup>1</sup> Regional Average - irrigated and non-irrigated |
| Non : non irrigated land                | <sup>2</sup> Estimated Average under irrigated land         |
| HS : heavy soil                         |   |
| PP/HS : Perennial pasture on heavy soil |   |

mm/annum

Shepparton Region - Accessions to the Groundwater (from independent studies)

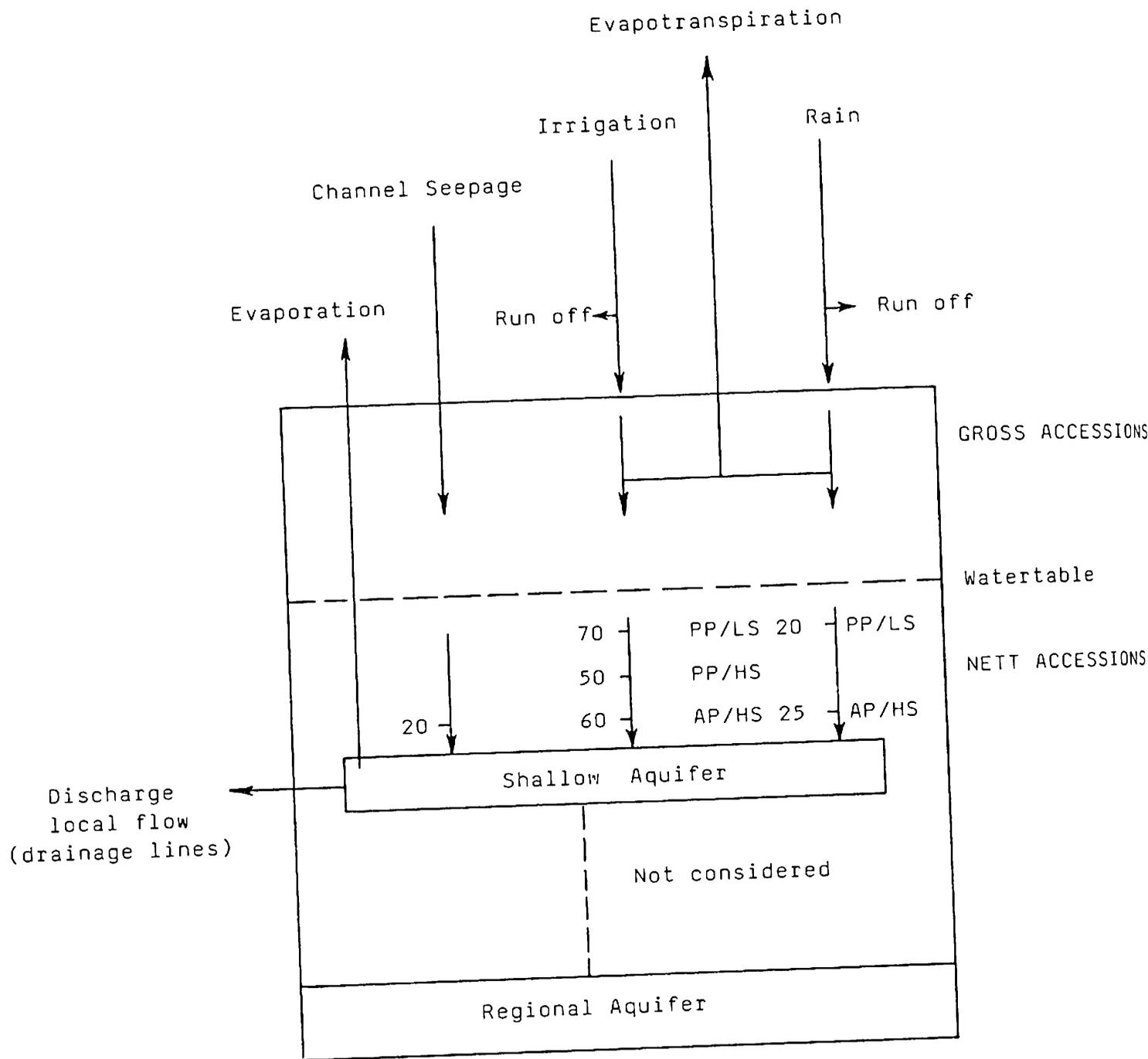


Footnotes

- A.P. : Annual Pasture
- P.P. : Perennial Pasture
- Non : Non irrigated
- HS : Heavy soil

mm/annum

Kerang Region - Accessions to the Groundwater  
(from independent studies)



mg/300000

Barr Creek Catchment Model  
Accessions to the Groundwater

**A PROPOSED SALINITY CONTROL STRATEGY**  
**FOR NORTHERN VICTORIA**

Extract from "Salinity Control in Northern Victoria" A Strategic Study for the Salinity Committee by Dwyer Leslie Pty. Ltd. in association with Maunsell & Partners Pty. Ltd. and a Specialist Group from Departments of the Government of Victoria (September, 1984).

PROPOSED SALINITY CONTROL STRATEGY

## 8.1 GENERAL JUSTIFICATION

Individual components of the salinity control strategy must be justified or supported in their own right. The problem arises that, in many cases, neither the required data nor the time has been available during the present study to undertake detailed analyses of all recommended components of the strategy. Therefore the following generalised justification is presented.

This report has demonstrated that direct agricultural productivity losses in irrigation areas will amount to some \$51 million per annum in the "non-intervention" situation. The equivalent losses in dryland areas of Northern Victoria will amount to \$12 million per annum and the "non-intervention" additional salt loads to the River Murray will impose annual costs on downstream users equivalent to \$3 million per annum.

Whilst it is difficult to generalise about what detailed economic evaluation would show, it is also clear that losses of this magnitude, if they could be totally avoided, would provide sound justification for the expenditure of "several hundreds" of millions of dollars. It is important to keep this concept clearly in mind when considering the following recommended strategy.

In addition to these direct effects, amounting to losses of some \$66 million per annum, there will be regional linkage effects, reducing regional income and welfare, which could quadruple the direct effects.

## 8.2 DRYLAND AREAS

## 8.2.1 Overview

The proposed broad strategies for short term action are as follows :

## Assessment:

The extent and severity of dryland accessions and the resultant seepage salting and stream salinisation to be more thoroughly assessed to permit better decision making by government by means of :

- o continued Department of Conservation, Forests and Lands (Soil Conservation Authority) "ISCON" project to quantify land degradation;
- o expansion of stream water quality and flow monitoring at key locations.

## Investigation and Research:

- o Determine more accurately those areas which are saline and also the land "at risk" with groundwaters close to the critical depth.
- o Continue to expand investigations into mechanisms of accession and groundwater movement through different soil profiles/regoliths; including accession and groundwater tracing in the Mallee and Riverine plain
- o Accelerate and expand recently begun research into water use under different land uses and management practices on different soil types with different climates.
- o Accelerate research to overcome agronomic constraints to alternative pastures and land use practices.

## Demonstration and Extension:

- o Continue "Best Bet Projects" demonstrating land use/management techniques considered necessary to control accession (in conjunction with water balance and mechanisms research)

- o Embark on greater awareness-extension to landowners to enable their better understanding of the whole dryland accession problem and its consequences, and understanding of principles of control
- o Study with landholder advisory networks (Department of Conservation, Forests and Lands and VFGA etc.) the possible need for incentives to achieve changes in land use/management and give the necessary government support to the findings
- o Provide appropriate staff to achieve these extension and advisory aims.

### 8.2.2 Assessment

Assessment of dry land salting is provided by:

- o visual field assessment and mapping by experienced field officers
- o detailed assessment by resistivity and electro magnetic induction

The former is covered in this section the latter in section 8.2.3, Research.

Detailed field assessment has been started in the Department of Conservation Forests and Lands (SCA) ISCON Project (Inventory of Soil Conservation Needs). The dry land salting proportion of this project is adequately covered by existing funding arrangements.

Stream salinity effects should be more accurately assessed and monitored by expansion of stream water quality and flow monitoring network. No attempt has been made here to cost this item.

### 8.2.3 Investigation and Research

Research for on-farm strategies to control dryland accessions to groundwater can be categorized as follows:

- o Salinity assessment
- o Determination of salinity processes
- o Quantification of problems
- o Agronomic options for control
- o Quantification of treatment
- o Modelling of treatment options

An integrated research programme is required which would enable better scheduling of research effort and co-ordination with the implementation stage of works. The scale of the above program is envisaged to be approximately \$2 million over the next 5 years.

#### 8.2.4 Demonstration and Extension

Chapter 5.2 provides background for the implementation of a programme of assistance to achieve accession control on the cropping and grazing farms of the uplands.

An additional amount of \$5 to \$10 million of public sector funding is estimated as being required to achieve the establishment of the necessary works on the ground (treeplanting, pasture practices and alternative cropping practices) for accession control on the uplands.

This figure is an indication of scale only and depends on the actual areas of the landscape requiring treatment and the levels of assistance provided. It is believed some assistance is essential for a complex land management problem where the cause and the effect are likely to occur on different land holdings and where treatments may take long periods to show effect.

Implementation of this programme could proceed now on approximately one third of the "Burkes Flat" type areas while the remainder of the programme depends upon further "mechanisms" research. It is believed the area of land treated would be 125,000 to 300,000 ha.

The achievement of works on the ground for accession control in the balance of the study area, the Mallee, Wimmera and Riverina Plain can not be accurately planned at this stage because of the degree of uncertainty involved. It is hoped that accession control in these predominately cropping zones may be achieved through productive land use, except in extremely wet years.

Additional extension effort is also required to promote landholder awareness of the need for accession control.

### 8.3 ON-FARM MEASURES IN IRRIGATION AREAS

#### 8.3.1 Introduction

The recommended strategy considers the need to;

- o minimize the effect of salinity where watertables are shallow or where irrigation water salinity is high.
- o minimize accessions to the groundwater and,
- o control groundwater levels where feasible

The strategy considered agricultural, environmental, hydrogeological and social requirements of the northern irrigation areas and the Murray River environs.

The recommendations are "best-bet" options based on, in some instances, insufficient information to accurately quantify the effects. The recommendations should be considered for immediate implementation with the understanding that modification may be necessary as the results of research and investigation come to fruition.

#### 8.3.2 Private Groundwater Pumping & Reuse

Private groundwater pumping and use for irrigation increases water availability and reduces rootzone salinities. Watertables are

controlled and disposal needs reduced, at least in the short to medium term. It must be combined with public groundwater pumping for long term viability.

Encouragement should be given to this option, where groundwater salinities allow, in both the irrigation districts and in up-valley areas overlying the deep leads.

### 8.3.3 Landforming, lasergrading and Surface Drainage

Landforming to an adequate grade increases productivity by eliminating "high-spots" and thereby improving leaching and reducing waterlogging and scalding. Labour requirements are also reduced.

Accession reduction as a result of landforming is only realized if surface run off is drained before it infiltrates to the groundwater. Recycling dams productively utilize runoff during the irrigation season; water harvesting dams utilize run-off during summer and most winters; regional drainage systems drain water at all times.

Encouragement should be given to landforming to an adequate grade, improving farm drainage with recycling or preferably water harvesting facilities and to improving farmer access to existing drainage systems or natural drainage ways.

The encouragement should apply to all northern irrigation districts.

### 8.3.4 Micro-irrigation

Micro-irrigation of high value horticultural crops is likely to lead to reduced accessions beneath such areas. It also leads to increased productivity through improved water use efficiency, better leaching of the rootzone in saline situations and reduced labour requirements.

Encouragement should be given to the micro-irrigation of horticultural crops in all northern irrigation districts.

### 8.3.5 Methods to encourage on-farm measures

Farmers have shown a willingness to adopt these measures where conditions such as drought, labour costs and high value crops encourage their use. Widespread adoption in the short-term, however, is limited by financial constraints, the relative cost of water from such works compared to water from the supply system, the cost of water relative to its marginal value and the cost of improved forms of irrigation compared to less controlled methods.

All of the recommended measures have productivity benefits for the farmer and benefits to a wider community in terms of reduced accessions to the water table. While these community benefits cannot be effectively quantified except on a specific case basis, in concept it would be to the community's advantage to transfer to the farmer the equivalent notional benefit which they would receive and thus improve the farmer's perception of the viability of the measure.

Again, in conceptual terms the farmer's perception of viability can be changed by increasing the costs to him of alternatives (increasing the price of channel water for example) or by reducing the price of the proposed measure in some way. Given the water allocation system in Victoria, this report favours reducing the perceived price of the measure to the farmer.

Thus the means of encouraging adoption of the preferred options could include;

- o loans at a reduced rate, such as under the salinity loans scheme
- o interest rebates on loans at commercial rates
- o grants for the implementation of preferred works and,
- o bounties to encourage adoption

In preparing specific policy instruments to give effect to these on-farm proposals, government may wish to consider sanctions in addition to encouragement. Techniques could include freeing, licensing

and land use controls with penalties.

The most efficient use of private and public funds will be made if they are tied to specialist advice especially in relation to farm planning. The availability of public funds, should therefore require specialist advice and direction as a prerequisite.

#### 8.4 SURFACE DRAINAGE IN IRRIGATION AREAS

##### 8.4.1 Kerang Region

The most intensively irrigated part of the region already has adequate surface drainage although remodelling and rationalisation of some of it is required. Some improvements have been carried out to natural drainage lines in other parts of the region. The Bullock Creek Improvement Trust has restored almost 200 km of drainage lines in the Tragowel Plains. The total length of drainage line to be upgraded is about 500 km. As well, the Gordon Shire has instigated a program of improving minor drainage lines to link with the major system.

Local initiatives to further improve the natural drainage lines should be encouraged, provided that care is taken to ensure that depression lines are not excavated to intersect the watertable and that the value of important wetland habitats is fully considered. The completion of these works would be achieved at a cost of about \$2 million.

Priority should be given to remodelling this existing drainage system where necessary and also to the identification of any natural drainage lines which require further improvement.

The main thrust in this region should be to encourage the installation of on-farm reuse systems, based on adequate "whole farm" development plans (See 8.3 above).

##### 8.4.2 Shepparton Region - Extension of Constructed Drains

Two extensions to surface drainage systems are presently under construction and are 50% or more completed. One involves some 14,600 ha of small areas of intensive development (near Kyabram, Ardmona, Mooroopna and Cobram). The other is the Lockington drainage system

which was designed to serve an area of 20,000 ha. It is assumed both these systems will be completed.

Murray Valley Drain 11 serving an area of 11,600 ha of moderate to high intensity development on the western end of the Closer Settlement area in Murray Valley has also been proposed at an estimated cost of \$6.5 million. Subject to appropriate justification these works should also proceed.

No other major drainage construction is proposed, but some remodelling of older systems is required. A comprehensive program of remodelling should be prepared and, subject to suitable economic justification should be completed over the next 10 years.

#### 8.4.3 Shepparton Region - Improvement of Natural Drainage Lines

The main course of the Mosquito Depression in the Tongala and Rodney Areas has been declared as a Drainage Course and removal of obstructions is about to commence. Other depressions identified for declaration are branches of the Mosquito, the Muckatah Depression in the south-east part of the Murray Valley area, and natural depressions which would improve drainage along the western margin of the Rochester Area.

Priority should be given to:-

- o completion of the Mosquito Depression works, which would serve approx 50,000 ha of land,
- o initiation of surveys and investigations in the other areas already identified, with a view to declaration and completion of the works within 5 years, and
- o surveys to identify any other drainage lines where declaration as Drainage Courses could be justified.

Works in these areas should be programmed for completion within 10 years. If it is assumed that the total area which could be served in this way is 100,000 ha, the total area served by constructed drains or

improved drainage lines could be increased to more than 300,000 ha by 1995. At a unit cost of \$100/ha served, the total cost of the program for improved drainage lines would then be \$10 million, although the major costs for removal of obstructions and improvements of road structures is expected to be borne by private landholders and shire councils.

As in the Kerang Region the program for improvement of natural drainage lines should be supported by a program to encourage on farm recycling of run-off water, based on adequate "whole farm" development plans.

## 8.5 SUBSURFACE DRAINAGE IN IRRIGATION AREAS

### 8.5.1 Kerang Region

Provision of subsurface drainage is a desirable aim for the Kerang region. Benefits (in terms of agricultural productivity on a per unit area basis) would be similar to those in the Shepparton region. There would also be significant benefits to River Murray water quality if the effluent could be disposed of locally. However, disposal costs would be very much greater than those in the Shepparton region, because of the need to keep all effluent separate from the surface water systems. There are only very small and isolated areas where effluent quality is suitable for even partial reuse.

Studies have shown that the cost of safe disposal of the saline effluent greatly exceeds the cost of the actual drainage works. The most recent study by Gutteridge, Haskins and Davey (1984) examined a groundwater pumping scheme within the Barr Creek catchment designed to protect 3,500 ha of intensively developed land. The total capital cost was estimated to be \$2,320/ha. More importantly, however, only about 9% of this cost (\$200/ha) would be incurred in installing the drainage works. The remainder is required for disposal of the effluent.

Despite the evident high costs it is clear that much more needs to be learned of the problems and effects of both groundwater pumping and local disposal of saline effluent by evaporation. There are many complex technical and community problems to be faced and overcome.

Therefore it is recommended that an appropriate groundwater pumping and disposal scheme be identified within the Kerang region and that it be designed and implemented as a matter of priority. All appropriate Government agencies should be involved in both project formulation and the monitoring of its effects. It is envisaged that the project should be designed to protect between 1,000 and 2,000 ha of land. Its cost is therefore likely to be between \$2 million and \$4 million.

In addition private initiatives for installation of subsurface drainage works (including local disposal works) should be supported with the best available technical information. This would reduce the risks of failure and ensure that worth-while performance data would be available for use elsewhere.

#### 8.5.2 Shepparton Region

The strategy proposed for the Shepparton region includes:-

- o installation of subsurface drainage works;
- o disposal arrangements for drainage effluent from both public sector and privately installed pumps; and
- o continuing investigations

Proposals outlined are only for the next 10 years and deal only with the most urgent problems which, it is assumed, will be in the moderate to high intensity areas which are already served with surface drains.

The program will need to be extended to a much larger area over the succeeding 20 to 30 years and detailed planning should be a high priority task during the initial 10 years.

The strategy assumes that, during the initial 10 years, disposal of drainage affluent will be primarily by a combination of local reuse and discharge to the Murray.

Increase in salinity in the Murray will be offset by provision of dilution flows from Victoria's allocation from the Murray system or

from Goulburn storages, as appropriate. This is the "least cost" option for offsetting the increased salinities at this time. Provision is also made for testing of options for local disposal of effluent on a sufficient scale to effectively evaluate the problems and potentials of this method.

Works proposed for the next 10 years include:-

- o Installation of up to 50 publicly owned and operated pumps in defined project areas large enough to ensure that benefits are not limited to isolated properties. These project areas will include two areas in which the problems of local disposal of drainage effluent will be developed and tested. One area will include testing of techniques of agricultural concentration of brackish or saline effluent;
- o Hire of 40 selected private pumps in areas where intensive groundwater pumping is already occurring and groundwater quality is considered to be at risk in the short-term. Hired pumps would discharge to the channel or drainage system at nominated times; and
- o Continuing investigations to: complete the water table monitoring grid; more accurately model water table behaviour and resulting salinity effects; study the performance of existing public and private pumps; and re-evaluate disposal options.

Effective implementation of this program will require continuing and improved liaison between the Rural water Commission, Department of Agriculture, Department of Minerals and Energy and Department of Conservation, Forests and Lands to identify areas of highest priority for implementation of works, and to ensure that monitoring, investigations and research are adequately coordinated.

Estimated capital costs for public sector inputs to the proposed initial 10 year programme are shown below.

o	Installation of about 50 new pumps plus adjustments to hired pumps	\$ 4,400,000
o	Development of local disposal options (installation and evaluation)	\$ 4,000,000
o	Assistance to landholders	\$ 1,200,000
o	Expanded investigations by RWC. and DME	\$ 5,000,000
	Total	\$ 14,600,000

The total cost of \$14.6 million would be spread over 10 years and averages \$1.46 million/yr. However expenditure would be expected to peak in years 2 to 6 at about \$2 million.

The project areas identified and implemented during the initial 10 year programme will include two areas in which the problems of local disposal of drainage effluent will be developed and tested. One of these project areas will also include testing of techniques of agricultural concentration of saline effluent.

The benefits of the proposed strategy for water table control would be:-

- o The proposed new pumps would protect a total area of about 13,000 ha
- o The hired pumps would increase the area over which watertables were lowered, and also the removal of some salt would ensure that groundwater salinity would not increase excessively. The area of watertable control would be about 2,500 to 3,000 ha.

The total area protected in the short term would be about 16,000 ha. However, the area receiving permanent protection (because groundwater quality is protected) would be about 22,000 ha. Combined with the existing Phase A pumps the total area within the region receiving permanent protection would be 40,000 ha. This remains a small part of the 140,000 ha already considered to have high watertables. It will be vital to have an ongoing program of subsurface drainage ready for implementation immediately this program is completed.

#### 8.5.3 Salt Loads Generated - Shepparton Region

Additional salt loads to the Murray would be generated by the proposed pumps, including the hired pumps.

Expected salt loads would be as follows:-

- o 50 new pumps - assumed capacity of 15,000 Ml/yr at an average salinity of 3,000 EC units, with 40% discharged to the Murray - 11,000 tonnes/yr
- o other pumps. Total output to the channels and drains would be 7,500 Ml/yr at 3,000 EC units. About 70% of the salt load would reach the Murray - 9,500 tonnes/yr.

The total salt load reaching the Murray from all projects would be approximately 20,500 tonnes/yr.

#### 8.5.4 Long Term Requirements - Shepparton & Kerang Regions

The sub-surface drainage strategy outlined above is designed to deal with short term problems and to provide the information upon which to develop a longer term strategy.

In the case of the Kerang region it is really not possible to say anything sensible about a potential long term sub-surface drainage strategy. This is because there are major, perhaps overwhelming, problems of disposal of the resulting highly saline effluent.

In the case of the Shepparton region it is possible to make some extremely broad assumptions and thus obtain an order of magnitude cost (in 1984 dollars) of a possible long term strategy. These assumptions include: re-use of around half of the pumped groundwater; external discharge of about one-quarter of the volume for disposal; and local disposal of the remainder.

Given these assumptions a total long term (10 to 50 years) costing might be:

Additional pumping	\$ 40 million
Local evaporation	\$ 70 million
Reticulation to evap. system	\$ 130 million

## 8.6 WETLAND AREAS

### 8.6.1 Habitat Values

The habitat value of wetlands in the study area has been externally modified by:

- o changes in hydrologic characteristics through either river regulation or drainage management
- o use of wetlands for water storages and distribution of irrigation water
- o rises in regional watertables
- o inflow from salt affected areas (both dryland and irrigation)
- o rises in local watertables as a result of irrigation
- o use as evaporation basins

In general, the effect of these changes on habitat values has been negative, although increased water and salinity levels in some lakes

have provided more abundant food supplies for a number of waterfowl species. High priority should be given to protecting the remaining freshwater wetlands which are in a relatively natural condition. These wetlands have the highest habitat values and include some of the most valuable areas in the region for recreation and timber production. Ranking of the above factors is difficult but the greatest impacts in most cases are probably due to the changes in the hydrologic characteristics of the wetlands. Sufficient water allocation to replenish the significant wetlands is a most important factor in maintaining and restoring the habitat values of these wetlands.

#### 8.6.2 General Recommendation

In view of large modifications to wetlands in Victoria generally and in Kerang specifically, the management of salinity should place emphasis on maintaining and recovering wetland habitat values.

#### 8.6.3 Specific Recommendations

- o The inquiry into water allocation in Northern Victoria should give weight to the need to provide water replenishment to selected wetlands.
- o No further wetlands should be used as evaporation basins for disposal of wastes from agricultural areas. Exceptions to this may be considered for the natural highly saline environments of Lakes Tyrell and Wahpool.
- o Lake Tutchewop should be restored to more acceptable salinity levels ( less than 20,000 EC) by outletting to other acceptable disposal environments such as evaporation basins (eg Mineral Reserve Basins).
- o The use of controlled discharge of salt to the River Murray under appropriate conditions should be pursued further for salt disposal and wetland management at Lake Tutchewop and for wetland management in other water bodies in the Kerang

region. (This action would be aided by the greater availability of replenishment water for wetlands).

- o A net improvement in overall habitat values should be a specific aim in future management plans for water flows through the Kerang wetlands.
- o In the resolution of conflict between farm irrigation and habitat values in the Kerang wetlands (e.g. as at Second Marsh), there be a preparedness to require the cessation of irrigation and compensate affected farmers accordingly.
- o Dryland salinity be appropriately addressed in order to protect terminal wetlands.

#### 8.7 SALINE EFFLUENT DISPOSAL STRATEGY

The disposal strategy for Northern Victoria assumes that the proposed Barr Creek Catchment Management Program will result in effective control of the Barr Creek salt loads and hence will obviate, at least for the present, the need to pipe effluent to Lake Tyrell for this purpose. The recommended strategy then becomes :

- o In the short term, adopt disposal via the River Murray with appropriate offsetting dilution flows and each disposal allocation to be project specific.
- o Continue intensive studies and investigations of alternatives to dilution including: re-use; local evaporation basins; pipelines to the sea; trade-offs with disposal works in other regions; and local treatment.
- o Adopt selected alternative disposal methods or alternative offsetting arrangements as they are proved to be justified and technically feasible, in accordance with strategies developed under the River Murray Water Quality Management Plan.

- o Continue to carefully monitor appropriate parameters of all drainage returns and tributary inflows.
- o Make a special effort (with the RMC) to understand and evaluate the threat of high nutrient loads.

## 8.8 RECOMMENDED EXPENDITURE PROGRAMME

The following programme of public sector expenditure (in addition to existing programmes) has been recommended in this Report. Complementary private sector expenditures are not shown.

Values are in million dollars

	Short Term (Nominal 10 years)	Long Term (Nominal 50 years)
DRYLAND AREAS	7 to 12	Not specified
SUPPORT FOR ON-FARM MEASURES		
. Land forming and Laser Grading	Up to 30	Nil
. On-farm water harvesting	Up to 5	"
. Micro-irrigation	Up to 3	"
. Private groundwater pumping and re-use	Up to 2	"
SURFACE DRAINAGE		
Kerang	2	Nil
Shepparton	16	Nil
SUB-SURFACE DRAINAGE (INCL. DISPOSAL)		
Kerang	Up to 4	Not specified
Shepparton	15	40

CHANNEL SEEPAGE CONTROL	Not specified	Not specified
DISPOSAL OF EFFLUENTS		
Kerang	Included	Not specified
Shepparton	Included	Up to 200
Wetlands	Not specified	Not specified
<hr/>		
TOTALS	70 to 90	200 to 400

**CURRENT AGENCY RESPONSIBILITIES, ROLES AND  
FUNCTIONS IN SALINITY CONTROL**

Extract from "The Organisation and Management of Salinity Control in Victoria", a discussion paper prepared for the Salinity Committee by M. Mackay and Associates, March, 1984.

APPENDIX 9 (Cont.): AGENCY RESPONSIBILITIES, ROLES AND FUNCTIONS IN SALINITY CONTROL

MINISTRY & AGENCY	LEGISLATIVE RESPONSIBILITIES/ROLE	CURRENT FUNCTIONS & ACTIVITIES
<u>AGRICULTURE:</u>		
310 . Department of Agriculture.	. No specific salinity control responsibilities.  . General responsibility for improving primary production by research, provision of information and increased product standards.	. Research - plant, soil, water relations; use of salt water; salt tolerant crops.  . Extension - advice/encouragement re improved on-farm techniques and irrigation technology.  . Liaison - other agencies; community groups.
. Rural Finance Commission	. No specific salinity control responsibilities.  . General powers to make loans to primary industry and administer Commonwealth/ State financial assistance schemes.	. Administration - Water Management Loan Scheme including loan subsidies for salinity control works.

MINISTRY & AGENCY	LEGISLATIVE RESPONSIBILITIES/ROLE	CURRENT FUNCTIONS & ACTIVITIES
<u>CONSERVATION, FORESTS AND LANDS:</u>		
. Forests	<ul style="list-style-type: none"> <li>. No specific salinity control responsibilities.</li> <li>. General responsibilities to manage, protect, conserve and improve Victoria's State forest resource for forest production and other long term community benefits.</li> </ul>	<ul style="list-style-type: none"> <li>. Research - salt tolerant native trees; trial plantings salted land.</li> <li>. Forest Management - of native forest in irrigation areas.</li> <li>. Tree Planting Assistance - extension; nurseries; Tree Growing Assistance Scheme; Farm Tree Loan Scheme.</li> <li>. Liaison - other agencies, community groups.</li> </ul>
. Fisheries and Wildlife	<ul style="list-style-type: none"> <li>. No specific salinity control responsibilities.</li> <li>. General responsibilities for conservation of Victoria's fish and wildlife resources.</li> </ul>	<ul style="list-style-type: none"> <li>. Conservation - fish and wildlife environments in salinity affected areas.</li> </ul>
. Lands	<ul style="list-style-type: none"> <li>. No specific legislation/responsibilities.</li> <li>. General responsibility for management/control of uncommitted crownland.</li> </ul>	<ul style="list-style-type: none"> <li>. Management - Crown Land in salt affected areas.</li> </ul>
. National Parks Service	<ul style="list-style-type: none"> <li>. No specific legislation/responsibilities.</li> <li>. General responsibility to manage National and State Parks and Reserves.</li> </ul>	<ul style="list-style-type: none"> <li>. Management/ - Conservation parks/reserves, including natural saline features.</li> </ul>

MINISTRY & AGENCY	LEGISLATIVE RESPONSIBILITIES/ROLE	CURRENT FUNCTIONS & ACTIVITIES
<u>CONSERVATION, FORESTS AND LANDS: (Cont'd)</u>		
. Soil Conservation	<ul style="list-style-type: none"> <li>. Conduct investigations into prevention, mitigation and reclamation of salinised soil outside irrigation districts and advise/assist landholders.</li> <li>. General responsibility:               <ul style="list-style-type: none"> <li>- prevention/mitigation soil erosion;</li> <li>- promotion soil conservation;</li> <li>- land utilization to enhance soil conservation/erosion control;</li> <li>- development/efficient use farm water resources.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>. Research - groundwater investigation for re-charge areas; field re-vegetation projects.</li> <li>. Extension - fieldwork/assistance for reclamation work on dryland farms.</li> <li>. Liaison - other agencies; community groups.</li> </ul>
<u>MINERALS &amp; ENERGY:</u>		
. Department of Minerals and Energy.	<ul style="list-style-type: none"> <li>. No specific salinity control responsibilities.</li> <li>. General responsibilities as for:               <ul style="list-style-type: none"> <li>- the investigation and assessment of the State's groundwater resources (as principle agency);</li> <li>- protection of groundwater from pollution; and</li> <li>- authorisation of bore drilling/</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>. Investigations - of groundwater resources specific to salinity control priorities.</li> <li>. Research - relationship of regional groundwater flow systems and salinity of dryland and irrigation areas.               <ul style="list-style-type: none"> <li>- long term prediction of salinity.</li> </ul> </li> <li>. Information - provision of advice to public (and other agencies) on groundwater resource and salinity levels.</li> </ul>

MINISTRY & AGENCY	LEGISLATIVE RESPONSIBILITIES/ROLE	CURRENT FUNCTIONS & ACTIVITIES
<u>PLANNING AND ENVIRONMENT</u>		
. Planning	<ul style="list-style-type: none"> <li>. No specific salinity control responsibilities.</li> <li>. General responsibility for Statewide development of appropriate land-use planning and advice to Government on, controls and strategies.</li> </ul>	<ul style="list-style-type: none"> <li>. Investigation - trial project in 'mapping' vegetation cover with hydrological data in McIvor Shire.</li> <li>. Land-use Controls - assistance to local councils in developing appropriate 'tree clearing' controls.</li> <li>. Regional Strategies - development of regional land-use strategies which take account of salinity control.</li> <li>. State Conservation Strategy</li> </ul>
. Environment Protection Authority	<ul style="list-style-type: none"> <li>. No specific salinity control responsibilities.</li> <li>. General responsibilities for: <ul style="list-style-type: none"> <li>- co-ordination of activities related waste discharges (including agricultural runoff);</li> <li>- licensing of point source discharge; and</li> <li>- preparation/recommendation of State Environment Protection Policies (SEPP's)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>. Licensing - of point source discharges</li> <li>. Monitoring - water quality in rivers and streams.</li> <li>. Policy Development - preparation of SEPP's for water catchments with salinity objectives; <ul style="list-style-type: none"> <li>- preparation of State wide SEPP for water quality including salinity.</li> </ul> </li> </ul>

MINISTRY & AGENCY	LEGISLATIVE RESPONSIBILITIES/ROLE	CURRENT FUNCTIONS & ACTIVITIES
<u>WATER RESOURCES:</u>		
<ul style="list-style-type: none"> <li>Ministry of Water Resources.</li> </ul>	<ul style="list-style-type: none"> <li>No specific salinity control responsibility.</li> <li>General responsibility for State wide policy, co-ordination and advice to the Minister.</li> </ul>	<ul style="list-style-type: none"> <li>Funding - development draft priorities for funding of water resources works program (including salinity control works) for consideration by the Minister and National Water Resources Program.</li> <li>Policy Development - preparation of State Water Plan including special focus on Irrigation and development of detailed regional strategy plans.</li> <li>Re-structuring - of water resources portfolio, including the establishment of a 'Rural Water Commission' with responsibility for irrigation.</li> </ul>
<ul style="list-style-type: none"> <li>State Rivers and Water Supply Commission (Rural Water Commission)</li> </ul>	<ul style="list-style-type: none"> <li>Specific legislative powers to:               <ul style="list-style-type: none"> <li>- construct, complete, operate and maintain drainage and salinity mitigation works;</li> <li>- supply water at a concessional charge to salt affected lands;</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Operation/ Maintenance of               <ul style="list-style-type: none"> <li>- the State's irrigation system;</li> <li>- 3,800 km of surface/ subsurface drains;</li> <li>- 84 groundwater pumps;</li> </ul> </li> </ul>

MINISTRY & AGENCY	LEGISLATIVE RESPONSIBILITIES/ROLE	CURRENT FUNCTIONS & ACTIVITIES
<u>WATER RESOURCES:</u> (Cont'd)	<ul style="list-style-type: none"> <li>- to purchase salt affected lands in or near the Macalister Irrigation District for reclamation and subsequent lease or sale;</li> <li>- prohibit/permit the discharge of saline water into either watercourses or SRWSC works.</li> <li>. General responsibilities/powers:</li> </ul>	<ul style="list-style-type: none"> <li>- large scale salinity control works.</li> <li>. Design/ Construction of - works to extend or augment the existing systems or provide new system or facility.</li> <li>. Allocation/ Pricing - irrigation water supplies for farmers.</li> <li>. Licensing - private water diversions, including groundwater diversions.</li> <li>. Co-ordination/ Liaison - other agencies, community groups and other governments, including River Murray Commission.</li> <li>. Extension - service to farmer on the efficient and effective use of irrigation water.</li> </ul>

APPENDIX 9 (Cont'd)

MINISTRY & AGENCY	LEGISLATIVE RESPONSIBILITIES/ROLE	CURRENT FUNCTIONS & ACTIVITIES
<u>TREASURY:</u>		
<ul style="list-style-type: none"> <li>Department of Management and Budget.</li> </ul>	<ul style="list-style-type: none"> <li>No specific responsibilities.</li> <li>General responsibility for review of individual budget submissions from ministries and agencies, preparation of State Budget and capital works program, allocation of approved funds, financial management of State's finances and provision of financial.</li> </ul>	
<u>PREMIER AND CABINET</u>		
<ul style="list-style-type: none"> <li>Department of the Premier and Cabinet</li> </ul>	<ul style="list-style-type: none"> <li>No specific responsibilities.</li> <li>General responsibility for policy co-ordination and advice across the State on behalf of the Premier and Cabinet.</li> </ul>	<ul style="list-style-type: none"> <li>Inter-governmental relation - management and co-ordination of the State's inter-governmental relations.</li> <li>Policy co-ordination - in respect of natural resources, policies and priorities.</li> </ul>



## EXTRACTS FROM PROCEEDINGS

The Minutes of the Proceedings of the Committee show Divisions which took place during the consideration of the draft report. A summary of those proceedings follows:

MONDAY, 22 OCTOBER, 1984

### Paragraph 10.4.2

.....The Committee notes that the advantages of each department are largely complimentary and that close co-operation between the departments will be essential for the success of a salinity control program. In fact, the State's capacity for salinity control would be greatest if the relevant skills of both departments were combined by incorporating the Land Protection Service within the Department of Agriculture to create a Department of Agriculture and Land Protection. Such a department should then be the principal agency and its Minister would be the Minister responsible for the central management of salinity control.

If such an amalgamation does not take place, the Committee would favour the Department of Agriculture as the principal agency.

Amendment proposed - That the words "The Committee would favour the Department of Agriculture as the principal agency" be omitted with a view to inserting in place thereof

"The Committee would favour the Department of Conservation, Forests and Lands as the principal agency"

(The Hon. J.W.S. Radford)

Question - That the words proposed to be omitted stand part of the paragraph - put

The Committee divided. (Chairman - Mr. Fogarty)

Ayes, 2

Noes, 1

The Hon. L.A. McArthur  
Mr. G. F. Stirling

The Hon. J.W.S. Radford

And so it was resolved in the affirmative.

\* \* \* \* \*

The Committee divided on the respective questions:

That Recommendations R18, R19 stand part of the Report.

In each case, the result of the Division was: (Chairman - Mr. Fogarty)

Ayes, 2

Noes, 1

The Hon. L.A. McArthur  
Mr. G. Stirling

Hon. J. Radford

And so it was resolved in the affirmative.

#### Para 14.2

#### Paying for Salinity Control

Read and Associates argue that to provide greatest economic efficiency the costs of salinity control should be borne by the person causing the problem. If that person cannot be identified, the beneficiary of the control should pay, and only if that is not feasible should the general community, through the Government, pay.

While acknowledging the logic of this approach, the Committee believes that, in the case of salinity, the following factors must also be taken into account:

- (1) The precise cause of many salinity problems is often uncertain.
- (2) The action that has led to the problem has frequently been undertaken by past generations in ignorance of the consequences and with the support of the community.
- (3) The length of time between the causative action and the appearance of a salinity problem is often at least several Decades.

We conclude that as a result of these factors an equitable arrangement will involve funding by Governments. In the case of farm-based measures, this funding will be directed at assisting and encouraging landholders to undertake action which otherwise would be unprofitable.

Question - That paragraph 14.2 stand part of the Report - put

Ayes, 2

Noes, 1

Hon. L.A. McArthur

Hon. J. Radford

Mr. G. Stirling

And so it was resolved in the affirmative.

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SOCIAL DEVELOPMENT COMMITTEE

R E P O R T

ON

FREEWAY SPEED LIMITS

---

Ordered to be printed

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EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

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Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W. A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H. G. Baylor, J. L. Dixon, C. J. Hogg, J. E. Kirner and K. I. M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

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EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

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Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave, and question - That, contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -

- (Mr. Fordham) - put and agreed to.

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## R E P O R T

The SOCIAL DEVELOPMENT COMMITTEE, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:

### 1. FUNCTIONS OF COMMITTEE

The functions of the Committee<sup>1</sup> are to inquire into, consider and report to the Parliament on -

- (a) any proposal, matter or thing concerned with the social development of the people of the State;
- (b) how the life of individuals, families and communities in the State may be improved; and
- (c) the role of Government in promoting the welfare of the people of the State.

### 2. TERMS OF REFERENCE

The Social Development Committee received a reference from the Governor in Council dated 12 October 1982 to inquire into, consider and report by 1 April 1983 whether or not maximum speed limits higher than the present limits prescribed by:

- (a) Regulation 1001(1)(c) of the Road Traffic Regulations 1973; and
- (b) Section 33(2) of the Motor Car Act 1958

should be prescribed in respect of Freeways.

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1. Parliamentary Committees Act 1968, Section 4E.

## 2.1 Road Traffic Regulations 1973

Regulation 1001(1)(c) states:

"A person shall not drive a vehicle on any highway (whether within a de-restricted zone or not) at a speed exceeding 100 kilometres per hour."

## 2.2 Motor Car Act 1958 - Section 33(2)

(2) A motor car shall not be used on any highway at a greater speed than -

Goods vehicles  
with pneumatic  
tyres

(a) In the case of a motor car carrying goods for hire or goods in the course of trade or constructed primarily to carry goods of any kind and fitted entirely with pneumatic tyres -

(i) if the weight of the motor car and of the load (if any) carried thereon exceeds three tonnes or if a trailer the weight of which together with the load (if any) carried thereon exceeds one tonne and which is fitted entirely with pneumatic tyres is attached to the motor car - 80 km/h

(ii) if a trailer the weight of which together with the load (if any) carried thereon does not exceed one tonne and which is fitted entirely with pneumatic tyres is attached to the motor car - 80 km/h or

(iii) if a trailer fitted with one or more tyres other than pneumatic tyres is attached to the motor car - 25 km/h;

Goods vehicles  
with other  
tyres

(b) In the case of a motor car carrying goods for hire or goods in the course of trade or constructed primarily to carry goods of any kind and fitted with one or more tyres other than pneumatic tyres -

- (i) if the weight of the motor car and of the load (if any) carried thereon together does not exceed three tonnes - 25 km/h; or
- (ii) if such weight exceeds three tonnes - 20 km/h;

Passenger  
vehicles with  
pneumatic  
tyres

(c) In the case of a motor car registered as a motor car used for carrying passengers for hire and fitted entirely with pneumatic tyres -

- (i) if no trailer is attached to the motor car and it is not licensed as a taxi-cab or a private hire car in accordance with the Transport Regulation Act 1958 and the regulations made thereunder - 80 km/h;
- (ii) if a trailer fitted entirely with pneumatic tyres is attached to the motor car -  
and the weight of the trailer together with the load does not exceed one tonne - 70 km/h;  
and the weight of the trailer together with the load exceeds one tonne - 65 km/h;
- (iii) if a trailer fitted with one or more tyres other than pneumatic tyres is attached to the motor car - 25 km/h;

Passenger  
vehicles with  
other tyres

(d) In the case of a motor car registered as a motor car and used for carrying passengers for hire and fitted with one or more tyres other than pneumatic tyres -

- (i) if the weight of the motor car and of the load (if any) carried thereon together does not exceed three tonnes - 25 km/h;
- (ii) if such weight exceeds three tonnes - 25 km/h;

Provided that this subsection shall not prejudice or affect the operation of any other provisions of this Act or of any regulation under this Act or of any regulation or by-law under any other Act prescribing a lower rate of speed.

### 3. BACKGROUND

This reference is to examine the current freeway speed limits for motor vehicles which prescribe:

- (a) for private vehicles, a maximum speed limit of 100 km/h;
- (b) for commercial vehicles, a maximum speed limit of 80 km/h;
- (c) for vehicles towing trailers - various speeds;

and consider whether higher maximum speeds should apply.

The Road Traffic Regulations 1973 define a freeway as:

" ... a length of highway defined by means of a freeway sign at the beginning and an end freeway sign at the end."

This definition does not differentiate between urban (Built-up area) and rural freeways and the varying characteristics found between freeways - triple/dual carriageway, divided by median strip or safety barrier, designed for different speed levels, etc. Also these maximum speed limits provided by Section 33(2) and Regulation 1001(1)(c) apply to both general purpose roads and freeways.

Appropriate Government agencies and interested organisations were invited to make a submission to the Inquiry and general public comment sought through newspaper advertisements on 6 November 1982. Submissions were received from the 33 individuals and organisations listed in the appendix to this Report.

#### 4. ARGUMENTS TO INCREASE SPEED LIMITS

Nine reasons have been advanced to the Committee as to why there should be an increase in speed limits on freeways for private motor and commercial vehicles.

##### 4.1 The high standard of freeways compared to general purpose roads

The modern freeway has a number of inbuilt safety features not found on other general purpose roads. The latest type of freeway is designed for a safe speed of 120 km/h and features no intersections, dual-triple carriageways, the use of wide median strips, no utility poles or trees, over/underpasses, etc., enabling safe higher speeds than those presently prescribed which cover all roads.

##### 4.2 Improved safety of vehicles

New vehicles have improved safety features and this has led to higher "safe" speeds than in the past. Some of these features are: radial tyres, improved braking, steering and lighting and, should a collision occur, reduced likelihood of death or injury.

##### 4.3 Majority of motorists travel at higher speeds on freeways compared with general purpose roads

Because of the design of freeways and safety of vehicles, the majority of motorists travel at a speed in excess of the maximum prescribed by law and that to increase the limits would merely "legalise" the situation.

The Road Safety and Traffic Authority which is the Victorian Government's primary adviser on road matters has submitted that its policy on speed limits is aimed at being realistic and enforceable and perceived as a safe maximum condition. The 85th percentile speed measure (which is a world standard gauge) is used as the principal indicator of the normal motorist's perceived maximum safe speed.

Studies by the Road Safety and Traffic Authority and other organisations show that there is a significant level of public disobedience in that the measured 85th percentile speed on freeways is 110 km/h for private and 90 km/h for commercial motorists.

Moreover, the Royal Automobile Club of Victoria states that from limited data available the current speed limit does not appear to curb speeds in Victoria compared to South Australia and New South Wales on freeways zoned to 110 km/h which show better compliance with the speed limit at the 85th percentile speed level.

In relation to commercial vehicles, the economic optimum operating speed is approximately 90 km/h.<sup>2</sup>

#### 4.4 Low accident rate on freeways

In their submissions the CRB/RoSTA working group and the Royal Automobile Club of Victoria state that even the earlier designed freeways have a lower accident rate than general purpose roads.

CRB/RoSTA research shows that freeways on average have less than 1/5 of the casualty accidents (persons killed or injured) than occur on divided arterial roads.

The reason for the lower accident rate on freeways is their significantly higher safety standards.

#### 4.5 Standardisation of speed limits with other States

Only Victoria and Queensland have a maximum speed less than 110 km/h for private motorists and to increase freeway speeds to a comparable level would lead to greater Australian standardisation of speed zoning.

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2. RoSTA report titled "Heavy Commercial Vehicle Speed and Operational Study Report 1978".

#### 4.6 Travel time benefits

Freeways are designed for the safe and efficient transportation of people and goods from their origin to their destination. \$246.7 million was spent over a four year period between 1977-78 to 1980-81 on freeways.<sup>3</sup> To the extent that motorists are not legally permitted to experience travel time benefits the total effect of this expenditure is not realised. An increase in the maximum speed limit would improve the quality of life of individuals who currently break the law to achieve what the majority see as an incorrect speed limit and to improve road transport economies. This is particularly relevant for rural freeways, where motorists tend to travel long distances.

#### 4.7 Reduce speed variability

The Committee has found that there is very limited Australian research on the behaviour pattern of motorists. However the Royal Automobile Club of Victoria have presented in their evidence road studies which have shown that the variability of speeds within a traffic stream is a significant determinant of the likelihood of collision. It submits that when speed limits are increased to the 85th percentile speed this reduces the variation of speeds within a general traffic stream. The Royal Automobile Club of Victoria quote a New South Wales and Victorian study which indicated that the 85th percentile speeds are similar, ranging from 109 km/h to 116 km/h compared with 110 km/h to 120 km/h for Victoria. The New South Wales speeds are closer to the posted maximum speed limit of 110 km/h whereas in Victoria it is 100 km/h.<sup>4</sup>

#### 4.8 Increasing length and number of freeways

Over recent years the total length of freeways has substantially increased - from 112 kilometres in 1972 to 376 kilometres. Consequently the Royal Automobile Club of Victoria claims that the Regulations should be altered to recognise the

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3. Figure obtained from C.R.B. annual reports.

4. "Speed Control" R.A.C.V. 1982.

significance of this development and permit speed zoning on freeways up to 110 km/h.

#### 4.9 Identification of high risk motorists

The Royal Automobile Club of Victoria believes that increasing the maximum speed limit of freeways to equate to the 85th percentile limit will better enable the limited number of police enforcement officers to concentrate and easily identify high speed risk motorists, rather than the low risk motorists.

### 5. ARGUMENTS AGAINST INCREASING SPEED LIMITS

Eight reasons have been advanced to the Committee as to why there should not be an increase in speed limits on freeways for private motor and commercial vehicles.

#### 5.1 Road safety

Several witnesses including RoSTA and the Victoria Police submitted that to raise the present limits could result in an increase in the severity of injury and lead to even higher speeds.

5.1.1 Severity of injury is directly related to vehicle speed at impact. Higher speeds result in greater impact forces which permit greater intrusion into the vehicle.

5.1.2 Even higher speeds: In their submission the Road Safety and Traffic Authority state that an increase in the private motorists' speed to 110 km/h would effectively allow them to travel at 120 km/h. It is claimed that the Police generally allow a tolerance of 10 km/h before apprehending motorists and the lack of resources could not permit a change of this practice.

Therefore increased speeds would have a detrimental result on the continuing decrease in the road toll.

## 5.2 Increased fuel consumption

It was considered that motorists should be at least encouraged to conserve finite resources and to raise the current speed limit could result in higher fuel consumption. No research evidence was provided to the Committee to support this claim.

## 5.3 Pollution

One individual witness drew attention to an American study regarding diesel engines which indicated a higher level of pollution with increased speeds. No Australian research was provided to show an increase in noise, particulate or smoke emission due to higher speeds.

## 5.4 Overall higher speeds at all levels

The Victoria Police believe that conditioning motorists to legally higher speeds on freeways may result in confusion and lead to overall higher speeds at all levels.

## 5.5 Different design standards of earlier freeways

According to the Country Roads Board there are approximately 20 km of inner urban freeways which, because of their earlier design are of a lesser standard to the modern freeway. These lesser standard freeways such as the city end of the Tullamarine and South Eastern Freeways are rated at 100 km/h maximum compared to the modern freeways which are rated at 120 km/h, the latter having substantially higher quality environment.

Therefore not all freeways could be speed zoned upwards.

## 5.6 Traffic density on inner urban freeways

The Institute of Engineers believes that due to the high traffic volume on urban freeways there should only be an increase in speeds on rural freeways.

## 5.7 Trend to smaller vehicles

It is claimed by the Victorian Automobile Chamber of Commerce that in contrast with larger six cylinder vehicles, small vehicles cannot travel safely at the existing maximum speed limit. The trend to smaller vehicles means that maximum limits should therefore be decreasing.

## 5.8 Need for increased signposting

The Country Roads Board claims that additional signposting (and therefore cost) will be required if new maximum speed limits for freeways are introduced.

## 6. COMMENT

6.1 The road environment of the modern freeway compared with even a good general purpose road is substantially different and does permit higher safe speeds than the current blanket maximum of 100 km/h and 80 km/h for private and commercial motorists, respectively.

Road studies by the CRB/RoSTA working group have shown that the average motorist (85th percentile) has observed this difference between road environments and is responding by travelling at free speeds higher than the maximum prescribed by law on freeways. Nevertheless as shown by research studies the accident rate of freeways is lower than on general purpose roads.

The major question considered by the Committee was that if the speed limit on freeways was increased to 110 km/h and 90 km/h for private and commercial vehicles respectively would motorists travel at these same speeds or continue to

travel at 10% above the new maximum speed limits - i.e. 120 km/h for private and 100 km/h for commercial vehicles?

After detailed consideration of all sources the Committee concludes that the average motorist would continue at his present level and not exceed the new maximum levels. The Committee believe that it is a matter of extending the principle of speed zoning which occurs in the Built Up area such as sections of Dandenong Road (75 km/h). In addition it believes that increasing the limits to 90 km/h for commercial and 110 km/h for private motorists would result in higher voluntary observance of all speed limits.

- 6.2 The Committee considers that it is illogical for the Government Authorities to support an increase in the commercial speed from 80 to 90 km/h without also increasing the private motorists' maximum speed limit. The environment of a freeway is no different for commercial as compared with private motorists.
- 6.3 From a pure road safety viewpoint the optimum course would be for all road speeds to decrease. However road safety is one of a number of considerations and to effectively achieve a reduction in current speeds a very large increase in the enforcement manpower level would be required. A fact of high speed is that should a collision occur the greater the severity of injury. However it is expected that there will be no appreciable change in the number of collisions or their severity because motorists are already travelling at the proposed higher level. Alternatively road safety can be improved by preventing collisions. Since the majority of private motorists are travelling at 110 km/h on freeways, to increase the legal maximum to this level will reduce the variability of speeds within a given traffic stream, hence reducing the likelihood of a collision.
- 6.4 The Committee concluded that there is a positive correlation between the earlier design of inner freeways and heavy urban traffic (particularly in peak times) and there is also a disparity between these freeways and the modern freeway environment. It believes that only freeways designed for travel speeds up to 120 km/h should be speed zoned up and the earlier design of freeways remain at a maximum of 100 km/h.

- 6.5 The Committee considered the aspects of increased fuel consumption, pollution, trend to smaller vehicles and increased signposting costs to be significantly minor as not to change existing practices and conditions and to be heavily outweighed by other factors related to the investigation.
- 6.6 The Transport Regulation Board refers to an anomaly which resulted from an amendment to Section 33(2)(a)(i) and (ii) of the Motor Car Act 1958, in December 1978 when the speed limit for commercial vehicles towing trailers was increased to 80 km/h. Under Section 33(2)(c)(ii) of the Motor Car Act 1958 passenger vehicles towing trailers are still restricted to 65 km/h or 70 km/h depending upon the weight involved. The Committee considers that this suggestion by the Board is worthwhile and recommends accordingly that speeds under the Section be increased to 80 km/h for freeways.
- 6.7 In holding this Inquiry the Committee has become aware of five related matters which do not strictly fall under the Terms of Reference but nonetheless are considered within the general ambit of the Terms of Reference.

6.7.1 The Transport Regulation Board has suggested that in the introductory words in paragraphs (c) and (d) of Section 33(2) of the Motor Car Act 1958, the expression:

"in the case of a motor car registered as a motor car and used for carrying passengers for hire ..."

should be amended to apply to a motor car fitted with seats for the carriage of eight or more passengers.

The Board advised of having difficulties in prosecution cases in proving that buses registered in another State are in fact registered for carrying passengers for hire. The Committee was sympathetic to this suggestion and agrees with it.

#### 6.7.2 Probationary drivers

The Committee believes that probationary drivers also should be permitted to travel at higher speed on modern freeways to maintain the existing 20 km/h difference with other private vehicles. Therefore Section 22B(2A) of the Motor Car Act 1958 will require amendment.

#### 6.7.3 New penalties

In conjunction with new speed limits of 110 km/h for private and 90 km/h for commercial motorists on modern freeways, the Committee considers that new penalties should be introduced for motorists convicted of grossly exceeding the new limits. The Committee felt that the matter ought to be referred to the Road Safety and Traffic Authority for consideration including the concept of a minimum penalty.

6.7.4 The Committee has adopted the suggestion by the Chairman of the Road Safety and Traffic Authority while giving evidence, that there is a need for a separate classification of "heavy" commercial vehicles in line with the 4.5 tonne category.

#### 6.7.5 Traffic infringement notice

Resulting from discussions with the Victoria Police the Committee formed the view that an excess number of police manhours were lost due to their attendance in courts for minor offences. The Committee believe that maximum police presence on freeways (and other roads) was of utmost importance for road safety. Consequently the Committee is of the opinion that a review of the on-the-spot infringement notice and the points-demerit system should be made in regard to maximizing police presence on the road.

#### 6.7.6 Speed lanes on freeways

The Committee considered that speed lanes should be introduced on freeways as a road safety measure. Since this was a new concept in Victoria it recommends that the Road Safety and Traffic Authority be requested to consider new regulations requiring probationary drivers and commercial vehicles to use the left lane (unless overtaking) and that

motorists travelling on the right hand side of a carriageway have a minimum travelling speed.

#### 6.7.7 Towing trailers

Consideration should be given to vehicles towing trailers (section 33(2)(c)(ii) of the Motor Car Act 1958) to travel at 80 km/h for all roads.

### 7. RECOMMENDATION

It is recommended that:

- 7.1 The Road Traffic Regulations 1973 be amended from 100 km/h to 110 km/h for private motorists (see paragraph 6.1).
- 7.2 Under Section 33(2)(a)(i), (ii) and (c)(i) for commercial vehicles of the Motor Car Act 1958 the maximum speed limit be increased to 90 km/h (see paragraph 6.1).
- 7.3 The maximum speed limits in section 33(2) parts (c)(ii) of the Motor Car Act 1958 for vehicles towing trailers be increased to 80 km/h (see paragraph 6.6).
- 7.4 The new maximum speed limits of 110 km/h for private motorists, 90 km/h for commercial and 80 km/h for towing trailers apply only to freeways which have been designed for 120 km/h. These freeways be speed zoned to 110 km/h for private and 90 km/h for commercial motorists (see paragraph 6.4).
- 7.5 The matters relating to:
  - (a) definition of passenger bus (6.7.1);
  - (b) probationary drivers (6.7.2);
  - (c) penalties (6.7.3);
  - (d) need for separate classification of "heavy" vehicle (6.7.4);

- (e) traffic infringement notices (6.7.5);
- (f) speed lanes for freeways (6.7.6);
- (h) towing trailers (6.7.7);

should be referred to the relevant Minister for consideration and response within six months.

Committee Room

21 March 1983

8. APPENDIX

A. Submissions Received

Government Agencies

Country Roads Board  
Road Safety and Traffic Authority  
Transport Regulation Board  
Victoria Police  
Victoria State Emergency Service

Local Government

City of Benalla  
City of Brunswick

Other Organisations

Australian Road Research Board  
B.M.W. Motorcycle Club of Victoria  
Bus Proprietors' Association (Vic.)  
Confederation of Australian Motor Sport  
Institute of Engineers, Australia, Vic. Division  
Motorcycle Riders Association  
Royal Automobile Club of Victoria (RACV) Ltd.  
The Victorian Motor Schools Association  
Transport Workers Union of Australia  
Victorian Automobile Chamber of Commerce  
Victorian Road Transport Association

Public

Bamix Australia Pty. Ltd.  
Barwisch, M.  
Bayly, J.J.  
Brown, P.J.  
Dugdale, L.S.  
Egan, E.G.  
Fraser, E.  
Halsall, P.  
Jones, M.H.  
Livingstone, J.A.  
McArthur, E.  
Moll, V.R.  
Schorel, G.H.  
Tail, J.J.  
Trehearne, R.E.

B. Verbal Evidence

Discussions were held with Assistant Commissioner (Traffic) Mr. R. J. Martin of the Victoria Police and Messrs. I. Russell, J. McKenzie and J. Sanderson of the Royal Automobile Club of Victoria.

A transcript of the evidence given by Dr. P. Vulcan Chairman of the Road Safety and Traffic Authority is attached to this Report.<sup>5</sup>

EXTRACT FROM THE PROCEEDINGS

The following summary from the Minutes of the Proceedings of the Committee show Divisions which took place during the consideration of the Draft Report.

Monday, 21 March 1983

The Committee divided on the respective questions, That paragraphs 6.1 and 7.5, as amended, stand part of the Report.

In each case, the result of the Division was:-

Ayes, 7

Noes, 1

Mr. Ernst  
The Hon. W. Jona  
Mrs. Hogg  
Mrs. Baylor  
Mr. Newton  
Mr. Saltmarsh  
Mr. Williams

Mr. Shell

And so it was resolved in the affirmative.

\* \* \* \* \*

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5. Minutes of evidence not printed.



SOCIAL DEVELOPMENT COMMITTEE

INTERIM REPORT

ON THE

MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL

Ordered to be printed

EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS  
OF THE LEGISLATIVE COUNCIL

---

FRIDAY, 2 JULY 1982

- 34 JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of Legislation to establish Joint Investigatory Committees:

\* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

TUESDAY, 21 SEPTEMBER 1982

- 6 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The President announced the receipt of a Message from the Assembly acquainting the Council of its Resolution to refer the provisions contained in the Medical Practitioners (Private Hospitals) Bill, when enacted, to the Social Development Committee for inquiry, consideration and report, and desiring the concurrence of the Council therein.

Ordered - That the Resolution be taken into consideration later this day.

- 14 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The Order of the Day was read for the consideration of the following Resolution of the Assembly:

That upon the enactment of the Bill, the provisions contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report.

The Honourable W.A. Landeryou moved, That the Council concur with the Resolution of the Assembly.

The Honourable A.J. Hunt moved, as an amendment, That all the words after "That" be deleted with the view of inserting in place thereof "this House declines to refer the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee in the form and manner proposed by the Resolution of the Assembly but that the Council would give favourable consideration to a Resolution in usual form to provide for reference of the proposals contained in that Bill to that Committee for inquiry, consideration and report".

The Honourable B.P. Dunn moved, That the debate be now adjourned.

Question - That the debate be now adjourned - put and resolved in the affirmative.

Ordered - That the debate be adjourned until later this day.

WEDNESDAY, 6 OCTOBER 1982

14 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The Order of the Day having been read for the resumption of the debate on the question, That the Council concur with the resolution of the Assembly, That, upon the enactment of the Bill, the provisions contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report *and on the amendment of the Honourable A.J. Hunt-* That all the words after "That" be deleted with the view of inserting in place thereof "this House declines to refer the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee in the form and manner proposed by the Resolution of the Assembly but that the Council would give favourable consideration to a Resolution in usual form to provide for reference of the proposals contained in that Bill to that Committee for inquiry, consideration and report" -

Debate resumed.

Leave was granted to the Honourable A.J. Hunt to add the expression "by 1 March 1983" to the proposed amendment.

Question - That the words proposed to be omitted stand part of the question - put and negatived.

Question - That the words proposed to be inserted be so inserted - put and resolved in the affirmative.

Question - That this House declines to refer the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee in the form and manner proposed by the Resolution of the Assembly but that the Council would give favourable consideration to a Resolution in usual form to provide for reference of the proposals contained in that Bill to that Committee for Inquiry, consideration and report by 1 March 1983 - put and resolved in the affirmative.

Ordered - That a Message be sent to the Assembly acquainting them therewith.

TUESDAY, 12 OCTOBER 1982

5 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The President announced the receipt of a Message from the Assembly acquainting the Council that they had now agreed to the following Resolution:

That the proposals contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report by 1 March 1983 -

and desiring the concurrence of the Council.

The Honourable W.A. Landeryou moved, That the Council concur with the Resolution of the Assembly.

Question - put and resolved in the affirmative.

Ordered - That a Message be sent to the Assembly acquainting them therewith.

ABSTRACT FROM THE VOTES AND PROCEEDINGS  
OF THE LEGISLATIVE ASSEMBLY

---

THURSDAY, 1 JULY 1982

36 COMMITTEE APPOINTMENTS - Motion made, by leave, and question - That contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \*

(e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -

(Mr. Fordham) - put and agreed to.

WEDNESDAY, 15 SEPTEMBER 1982

15 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - Order read for resuming debate on question - That this Bill be now read a second time; debate resumed; Bill read a second time and committed.

Ordered - That the Bill be considered in Committee later this day.

Motion made and question proposed - That proposals contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report (*Mr. Lieberman*) - and, after debate -

Amendment proposed - That the word "proposals" be omitted with the view of inserting in place thereof the expression "upon the enactment of the Bill, the provisions" (*Mr. Roper*).

Question - That the word proposed to be omitted stand part of the question - put and negatived (on division).

Question - That the expression proposed to be inserted be so inserted - put and agreed to (on division).

Question - That upon the enactment of the Bill, the provisions contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report - put and agreed to (on division).

Ordered - That a Message be sent to the Legislative Council acquainting them of the resolution and seeking their concurrence therein.

Bill considered in Committee and reported with amendments, as amended, considered, and amendments agreed to; read the third time.

Ordered - That the Bill be transmitted to the Legislative Council and their concurrence desired therein.

THURSDAY, 7 OCTOBER 1982

- 6 MESSAGE FROM THE LEGISLATIVE COUNCIL - Acquainting the Assembly that, having considered the Resolution of the Assembly that, upon the enactment of the Bill, the provisions contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report, they have agreed to the following Resolution:

That this House declines to refer the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee in the form and manner proposed by the Resolution of the Assembly but that the Council would give favourable consideration to a Resolution in usual form to provide for reference of the proposals contained in that Bill to that Committee for inquiry, consideration and report by 1 March 1983.

Ordered - That the Message be taken into consideration later this day.

TUESDAY, 12 OCTOBER 1982

- 7 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The Order of the Day for the consideration of the Message of the Legislative Council was read.

Motion made and question - That - (a) the resolution of the House of 15 September last, referring the provisions of the Medical Practitioners (Private Hospitals) Bill upon enactment to the Social Development Committee be read and rescinded; and (b) the House do now agree to the following: That the proposals contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report by 1 March 1983 (*Mr. Roper*) - put, after debate, and agreed to.

Ordered - That a Message be sent to the Legislative Council acquainting them of the latter resolution and seeking their concurrence therein.

WEDNESDAY, 13 OCTOBER 1982

- 5 MESSAGE FROM THE LEGISLATIVE COUNCIL - Acquainting the Assembly that they have agreed to the resolution referring the proposals contained in the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee.

## REPORT

The SOCIAL DEVELOPMENT COMMITTEE, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:

Due to the complexity of the Bill and its associated matters and the difficulty in obtaining witnesses over the Christmas recess which delayed holding of public hearings, the Committee requests an extension of time till 13 May 1983 to complete the final Report.

Committee Room,  
9 March 1982.





SOCIAL DEVELOPMENT COMMITTEE

FINAL REPORT

ON THE

MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL

---

Ordered to be printed

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CHRONOLOGICAL ABSTRACT FROM THE MINUTES OF THE PROCEEDINGS  
OF THE LEGISLATIVE COUNCIL AND THE VOTES AND  
PROCEEDINGS OF THE LEGISLATIVE ASSEMBLY

---

THURSDAY, 1 JULY 1982

LEGISLATIVE ASSEMBLY

- 36 COMMITTEE APPOINTMENTS - Motion made, by leave, and question - That contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -

(Mr. Fordham) - put and agreed to.

FRIDAY, 2 JULY 1982

LEGISLATIVE COUNCIL

- 34 JOINT INVESTIGATORY COMMITTEES - The Honourable W. A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \*

- (e) The Honourables H. G. Baylor, J. L. Dixon, C. J. Hogg, J. E. Kirner and K. I. M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

WEDNESDAY, 15 SEPTEMBER 1982

LEGISLATIVE ASSEMBLY

- 15 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - Order read for resuming debate on question - That this Bill be now read a second time, debate resumed; Bill read a second time and committed.

Ordered - That the Bill be considered in Committee later this day.

Motion made and question proposed - That proposals contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report (Mr. Lieberman) - and, after debate -

Amendment proposed - That the word "proposals" be omitted with the view of inserting in place thereof the expression "upon the enactment of the Bill, the provisions" (Mr. Roper).

Question - That the word proposed to be omitted stand part of the question - put and negated (on division).

Question - That the expression proposed to be inserted be so inserted - put and agreed to (on division).

Question - That upon the enactment of the Bill, the provisions contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report - put and agreed to (on division).

Ordered - That a Message be sent to the Legislative Council acquainting them of the resolution and seeking their concurrence therein.

Bill considered in Committee and reported with amendments, as amended, considered, and amendments agreed to; read the third time.

Ordered - That the Bill be transmitted to the Legislative Council and their concurrence desired therein.

TUESDAY, 21 SEPTEMBER 1982

LEGISLATIVE COUNCIL

- 6 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The President announced the receipt of a Message from the Assembly acquainting the Council of its Resolution to refer the provisions contained in the Medical Practitioners (Private Hospitals) Bill, when enacted, to the Social Development Committee for inquiry, consideration and report, and desiring the concurrence of the Council therein.

Ordered - That the Resolution be taken into consideration later this day.

- 14 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The Order of the Day was read for the consideration of the following Resolution of the Assembly:

That upon the enactment of the Bill, the provisions contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report.

The Honourable W. A. Landeryou moved, That the Council concur with the Resolution of the Assembly.

The Honourable A. J. Hunt moved, as an amendment, That all the words after "That" be deleted with the view of inserting in place thereof "this House declines to refer the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee in the form and manner proposed by the Resolution of the Assembly but that the Council would give favourable consideration to a Resolution in usual form to provide for reference of the proposals contained in that Bill to that Committee for inquiry, consideration and report".

The Honourable B. P. Dunn moved, That the debate be now adjourned.

Question - That the debate be now adjourned - put and resolved in the affirmative.

Ordered - That the debate be adjourned until later this day.

WEDNESDAY, 6 OCTOBER 1982

LEGISLATIVE COUNCIL

- 14 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The Order of the Day having been read for the resumption of the debate on the question, That the Council concur with the Resolution of the Assembly, That, upon the enactment of the Bill, the provisions contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report and on the amendment of the Honourable A. J. Hunt - That all the words after "That" be deleted with the view of inserting in place thereof "this House declines to refer the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee in the form and manner proposed by the Resolution of the Assembly but that the Council would give favourable consideration to a Resolution in usual form to provide for reference of the proposals contained in that Bill to that Committee for inquiry, consideration and report" -

Debate resumed.

Leave was granted to the Honourable A. J. Hunt to add the expression "by 1 March 1983" to the proposed amendment.

Question - That the words proposed to be omitted stand part of the question -put and negated.

Question - That the words proposed to be inserted be so inserted - put and resolved in the affirmative.

Question - That this House declines to refer the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee in the form and manner proposed by the Resolution of the Assembly but that the Council would give favourable consideration to a Resolution in usual form to provide for reference of the proposals contained in that Bill to that Committee for inquiry, consideration and report by 1 March 1983 - put and resolved in the affirmative.

Ordered - That a Message be sent to the Assembly acquainting them therewith.

THURSDAY, 7 OCTOBER 1982

LEGISLATIVE ASSEMBLY

- 6 MESSAGE FROM THE LEGISLATIVE COUNCIL - Acquainting the Assembly that, having considered the Resolution of the Assembly that, upon the enactment of the Bill, the provisions contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report, they have agreed to the following Resolution:

That this House declines to refer the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee in the form and

manner proposed by the Resolution of the Assembly but that the Council would give favourable consideration to a Resolution in usual form to provide for reference of the proposals contained in that Bill to that Committee for inquiry, consideration and report by 1 March 1983.

Ordered - That the Message be taken into consideration later this day.

TUESDAY, 12 OCTOBER 1982

LEGISLATIVE ASSEMBLY

- 7 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The Order of the Day for the consideration of the Message of the Legislative Council was read.

Motion made and question - That - (a) the resolution of the House of 15 September last, referring the provisions of the Medical Practitioners (Private Hospitals) Bill upon enactment to the Social Development Committee be read and rescinded; and (b) the House do now agree to the following: That the proposals contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report by 1 March 1983 (Mr. Roper) - put, after debate, and agreed to.

Ordered - That a Message be sent to the Legislative Council acquainting them of the latter resolution and seeking their concurrence therein.

LEGISLATIVE COUNCIL

- 5 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The President announced the receipt of a Message from the Assembly acquainting the Council that they had now agreed to the following Resolution:

That the proposals contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Social Development Committee for inquiry, consideration and report by 1 March 1983 -

and desiring the concurrence of the Council.

The Honourable W. A. Landeryou moved, That the Council concur with the Resolution of the Assembly.

Question - put and resolved in the affirmative.

Ordered - That a Message be sent to the Assembly acquainting them therewith.

WEDNESDAY, 13 OCTOBER 1982

LEGISLATIVE ASSEMBLY

- 5 MESSAGE FROM THE LEGISLATIVE COUNCIL - Acquainting the Assembly that they have agreed to the resolution referring the proposals contained in the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee.

TUESDAY, 15 MARCH 1983

LEGISLATIVE ASSEMBLY

- 14 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - Motion made, by leave, and question - That the Joint Resolution of the Legislative Council and the Legislative Assembly referring the proposals contained in the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee be amended as follows:

Omit "1 March 1983" and insert "13 May 1983".

(Mr. Roper) - put, and agreed to.

Ordered - That a Message be sent to the Legislative Council acquainting them of the resolution and seeking their concurrence therein.

LEGISLATIVE COUNCIL

- 9 MEDICAL PRACTITIONERS (PRIVATE HOSPITALS) BILL - The President announced the receipt of a Message from the Assembly acquainting the Council that they have agreed to the following Resolution:

That the Joint Resolution of the Legislative Council and the Legislative Assembly referring the proposals contained in the Medical Practitioners (Private Hospitals) Bill to the Social Development Committee be amended as follows:

Omit "1 March 1983" and insert "13 May 1983" -

and desiring the concurrence of the Council.

The Honourable W. A. Landeryou moved, That the Council concur with the Assembly in amending the Joint Resolution as set forth in the foregoing Resolution - put and resolved in the affirmative.

Ordered - That a Message be sent to the Assembly acquainting them therewith.



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## R E P O R T

The SOCIAL DEVELOPMENT COMMITTEE, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:-

### 1. FUNCTIONS OF COMMITTEE

The functions of the Committee<sup>1</sup> are to inquire into, consider and report to the Parliament on:-

- (a) any proposal, matter or thing concerned with the social development of the people of the State;
- (b) how the life of individuals, families and communities in the State may be improved; and
- (c) the role of Government in promoting the welfare of the people of the State.

### 2. TERMS OF REFERENCE

On 12 October 1982, both Houses of Parliament resolved that the proposals contained in the Medical Practitioners (Private Hospitals) Bill be referred to the Committee for inquiry, consideration and report. The initial time limit was for the Committee to report to Parliament by 1 March 1983 but following acceptance of the Committee's Interim Report of 9 March 1983, the time limit was extended to 13 May 1983.

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1. Parliamentary Committees Act 1968, Section 4E.

### 3. BACKGROUND

3.1 The Director of Consumer Affairs first drew attention to the inherent conflict of interest when medical practitioners referred patients to private hospitals in which they had a financial interest, when he stated in his 1980 Report to Parliament <sup>2</sup>:-

14.17 The Ministry has also been concerned with the ownership of private hospitals by doctors and surgeons who use the hospital for their patients. Is this akin to a judge having shares in a jail and being paid accommodation charges for the inmates? Alternatively, should there be a legislative requirement for such doctors or surgeons to disclose any interest before arrangements are made with patients for admission to the hospital?

14.18 The above paragraph is not to be interpreted as a criticism of private ownership of health care facilities, nor that a profit is unethical, but merely to indicate a conflict of interest situation which would not be acceptable in other professional areas.

3.2 Private research, made available to the Health Commission by Professor L. J. Opit, Department of Social and Preventive Medicine, Faculty of Medicine, Monash University, Dr. J. B. Morley and Mr. R. G. Taylor, into the pattern of ownership of private investor hospitals also highlighted this inherent conflict of interest. As a result, the Health Advisory Council undertook a limited study during 1980/81 which produced no evidence of abuse of this inherent conflict of interest by medical practitioners. However the Council did acknowledge that there was an inherent conflict of interest and therefore recommended that medical practitioners should disclose to patients any financial interest they had in private hospitals, when referring patients to those hospitals.

3.3 In September 1982 the Minister of Health introduced the Medical Practitioners (Private Hospitals) Bill, the intention of which is to prohibit medical practitioners from referring patients to private hospitals in which they hold a notifiable interest.

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2. Report of the Director of Consumer Affairs, 1979-80, p. 106.

The Bill provides for an exemption authority by the Minister of Health where, after consultation with the Health Commission, he is satisfied that special circumstances exist in respect of the medical practitioner or of the private hospital which render an authorisation desirable.

- 3.4 The Committee has noted new disclosure type legislation in New South Wales and that two other Australian States are considering introducing legislation based on disclosure, rather than "prohibition". No Australian State has legislation of the intent of the Bill under consideration.
- 3.5 Currently there is no specific legislative requirement for a medical practitioner when referring a patient to a private hospital to advise the patient that he has a notifiable interest in that hospital.

#### 4. SUBMISSIONS TO INQUIRY

Appropriate government agencies and interested organisations and individuals were invited to make submissions to the Inquiry and general public comment sought through newspaper notices on 30 October 1982. Thirty-one submissions were received from the individuals and organisations listed in the Appendix to this Report. Following detailed examination of all written submissions the Committee heard evidence from eighteen organisations and/or individuals.\*

#### 5. INHERENT CONFLICT OF INTEREST

- 5.1 The term "inherent conflict of interest" refers to a situation whereby a medical practitioner when referring and treating a patient in a private hospital, has on the one side, an ethical duty to his patient and on the other side a financial interest in the private hospital. In the Bill the concept of "financial interest" is embraced in the term "notifiable interest". Notifiable interest includes any benefit derived directly or indirectly by medical practitioners and the Bill provides that it occurs if:-

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\* Minutes of Evidence not printed.

- he or a member of his family or a corporation in a share of which he or a member of his family has a relevant interest has any interest in or is otherwise entitled to possession of the land or buildings where the private hospital is conducted or the equipment of the private hospital;
- he or a member of his family or a corporation in a share of which he or a member of his family has a relevant interest is the proprietor of the private hospital;
- he or a member of his family has an interest (whether vested or contingent) under a trust where the trustee of the trust or a corporation in a share of which the trustee has a relevant interest has any interest or entitlement described in the above paragraph or is the proprietor of the private hospital;
- he or a member of his family is a director of a corporation which has any interest in or is otherwise entitled to possession of the land or buildings where the private hospital is conducted or the equipment of the private hospital or which is the proprietor of the private hospital;
- he or a member of his family otherwise has any direct or indirect financial interest in or directly or indirectly receives any financial benefit from the private hospital;
- he is a member of a partnership another member of which has a notifiable interest in that private hospital; or
- he is the employer or employee of a medical practitioner who has a notifiable interest in that private hospital.

Two exceptions are provided. A medical practitioner does not have a notifiable interest if he receives a fee or remuneration for performing the duties and functions of a medical practitioner at that private hospital; nor does an interest accrue if he is a director or member or is otherwise involved in the management or control of a corporation or a body which is established for a benevolent or charitable purpose and which is not carried on for profit or gain to its individual members and is by the terms of its constituent document prohibited from making any distribution, whether in money, property or otherwise to its members.

5.2 The Committee believes that any direct or indirect use of hospitals for the purpose of maximising not-taxable cash flows must be included within the concept of conflict of interest and accordingly be brought within the definition of notifiable interest. The Committee believes that de jure and de facto relationships should also be included in the definition of notifiable interest.

- 5.3 Evidence presented by the Health Commission referred to practitioners with a financial interest in private hospitals. "Notifiable interest" includes financial interest but also covers the interests of close relatives and partners, and rights to equipment and buildings.

The Health Advisory Council decided that an abuse of the inherent conflict of interest existed if medical practitioners who had a financial interest in a private hospital:-

- (i) admitted patients unnecessarily to the hospital; or
- (ii) prolonged the length of a patient's stay in hospital; or
- (iii) admitted patients to the hospital when a hospital in which there was no financial interest may have better served the patient's needs.

The Committee has agreed with the Health Advisory Council's assessment of when an abuse of this inherent conflict of interest can occur.

## 6. NO EVIDENCE OF ABUSE OF INHERENT CONFLICT OF INTEREST

- 6.1 The Ministry of Consumer Affairs could not present to the Committee any factual evidence or cases to indicate abuse by medical practitioners of their inherent conflict of interest.

Mr. J. King, the Acting Director of the Ministry of Consumer Affairs gave evidence that when the situation was first given publicity by the then Director on radio 3LO:

The result of that was an avalanche of complaints.<sup>3</sup>

However, no record of telephone complaints is kept by the Ministry, as stated by Mr. Lachowicz, Deputy Director:-

One must keep in mind that we consider complaints, only those complaints which are lodged in writing or where the consumer comes into the bureau and issues a personal complaint.

---

3. Minutes of Evidence, p. 28.

We do not keep any record of complaints received over the telephone, they are considered to be telephone enquiries. There are reasons for excluding telephone enquiries from complaints. We have three telephone lines open to the public and they run hot, that is probably why we do not keep records.

It is hard for us to quantify or support the statements of specific examples brought to our attention regarding a problem area. After a fortnight or three weeks telephone calls relating to medical complaints fell off. We now get the occasional telephone call but when we ask consumers over the telephone whether they will lodge a complaint in writing they usually back off.

The explanation is that they have a good relationship with their doctor and they do not want to jeopardize their health<sub>4</sub> by lodging a complaint against him. We get that kind of explanation.

Moreover, because the Ministry has no qualified staff to deal with medical complaints, complaints are referred to the Australian Medical Association or the Medical Board of Victoria for investigation.

- 6.2 The Health Commission advises that there are 59 medical practitioners out of 10,000 registered medical practitioners in the State, who are known to have a financial interest in 42 private hospitals. This represents less than 1% of all medical practitioners in the State.<sup>5</sup>

## 7. COMMENT

- 7.1 The Committee was concerned that there was a lack of information available to the Health Commission regarding the activities of medical practitioners. The difficulty encountered by this Committee through lack of information was highlighted in assessing the evidence presented by Dr. I.A. McGoldrick. Pages 258 to 281 of the Minutes of Evidence.

Precise figures of the number of medical practitioners with notifiable interests in private hospitals and the number and use of these private hospitals by other practitioners should have been known by the Commission, especially as the Bill was introducing prohibition.

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4. Minutes of Evidence, p. 32.

5. Minutes of Evidence, p. 69.

However, from the evidence available to it, the Committee was satisfied that there is an inherent conflict of interest when a medical practitioner refers a patient to a private hospital in which he\* has a notifiable interest.

7.2 The Committee has considered the claim by the Health Commission that disclosure was ineffective. In evidence the Chairman of the Health Commission stated:

... However, our major objection is that when a person is admitted to hospital it is often an act done in a sense of emotion, in a sense of pain and in some other way and it is very hard for a person in those circumstances to make a rational judgement.

It is not like a person deciding to buy a new motor car. One goes to the show room, thinks about it and says that he or she will either have the car or not have the car.

A person goes to a doctor with either a pain or a symptom and the practitioner advises the treatment. The person is very much under the influence of that adviser. Therefore we do not believe that disclosure is as effective as it might be.<sup>6</sup>

The Committee believes that the onus must be on the practitioner and if he considers that the patient does not or cannot comprehend the significance of the practitioner's financial involvement in the hospital, then approval to admit should be sought from a responsible relative or legal guardian, or authorised representative of the Health Commission.

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6. Minutes of Evidence, p. 72.

\* Acts Interpretation Act 1958 Section 17 - Words signifying the masculine gender shall be deemed and taken to include the feminine gender.

## 8. ALTERNATIVE

8.1 The Committee considers that medical practitioners must inform patients of their notifiable interest in those hospitals to which they are referring their patients and that a procedure be adopted to enable accurate statistics to be collected and evaluated. To achieve this, the intent of the new legislation should provide that:

- (a) Medical practitioners who have a notifiable interest in a private hospital in which they are referring a patient must inform that patient of the medical practitioners' notifiable interest. The medical practitioner is then to obtain the signature of that patient on a prescribed form which details the notifiable interest.

If the patient is unable to comprehend and sign the form then the authority and signature is to be obtained from a close relative or legal guardian or authorised representative of the Health Commission.

Provision should be made for emergency cases in which a delay would be detrimental to the health of a patient.

- (b) Where a patient decides not to be admitted to a particular hospital recommended by the practitioner, then the practitioner must either suggest an alternative hospital or refer the patient to another equivalent practitioner or to the original general practitioner for a second referral.
- (c) On admission to a private hospital, the patient or close relative/legal guardian or authorised representative of the Health Commission must sign a prescribed form stating that they have been informed of the notifiable interest the practitioner has in the hospital.

- (d) Private hospitals which have medical practitioners with a notifiable interest in that hospital are to make available upon request and on admission a suitable information sheet showing the names of all medical practitioners deemed to have a notifiable interest in that hospital, the amount and form of interest. A display board in the hospital foyer showing the names of medical practitioners with a notifiable interest is to be kept and updated.
- (e) The Health Commission is to be kept informed by the Secretary or Manager of the private hospital of all medical practitioners who have a notifiable interest in that hospital.
- (f) A monthly return of patients who have been referred to that hospital in which the medical practitioner has a notifiable interest must be sent to the Health Commission by the relevant hospital. It should show:-
- patient identification code (subject to acceptable levels of confidentiality).
  - name of referring medical practitioner.
  - name(s) of medical practitioner treating patient.
  - number of days admitted.
  - reason for admittance.

8.2 The purpose of this return is to show accurately the number of medical practitioners who have a notifiable interest in private hospitals, the number of hospitals involved and extent of any abuse. After a 12 month period an analysis of the above statistics (items 8.1 (e) & (f)) should be made, and the Committee is of the opinion that should any individual medical practitioner be found guilty of abuse, then the Minister of Health should have the power if the nature of the offence is justified, to prohibit that medical practitioner from sending and treating patients to private hospitals in which he has a notifiable interest.

In certain circumstances the Minister must have the authority under this Bill where he considers it necessary to prohibit a medical practitioner from having a notifiable interest in any private hospital whilst he remains registered as a medical practitioner in this State.

## 9. OTHER MATTERS OUTSIDE TERMS OF REFERENCE

### 9.1 Evidence provided by Dr. J. B. Morley

The Committee was sufficiently concerned at the tenor of Dr. Morley's evidence, tentative though some of his findings were, as to refer the transcript of his evidence and supporting documents to the Attorney-General for further attention.

### 9.2 Medical Board of Victoria

The President of the Medical Board Dr. B. Neal while giving evidence referred to the need for an overall review of the Board including its power, function, reporting, funding and staff resources. The Committee strongly supports the need for this review and an immediate revision of its composition to include consumer representation.

The Committee will take into account any review of the Medical Board through its other inquiry into complaints against health services which has just commenced.

### 9.3 Peer review

The Committee supports the concept of peer review and felt that the practice should be encouraged as an important adjunct to any statutory or other supervisory review. The Committee believes that this peer review should be an integral part of both public and private hospital systems.

#### 9.4 Need for general review of inherent conflict of interest

The Committee is of the opinion that the problem of inherent conflict of interest exists in most professions and trades, such as barristers and solicitors, opticians selling glasses, medical practitioners and diagnostic laboratories and tradesmen using the same retailer. The Committee believes that it would be very difficult for a consumer to use the provisions of the secret commissions section of the Crimes Act 1958 against any professional person if they believe an abuse of the inherent conflict of interest occurred. Hence the Committee recommends that the Ministry of Consumer Affairs should examine the concept of abuse of inherent conflict of interests within industries and professions with the intention of introducing a code of conduct.

#### 9.5 Over/Under servicing of patients and medi-fraud information

The Committee believes that the Health Commission should have full access to medi-fraud information obtained by the Federal Government within the terms of Commonwealth Legislation in order to provide evidence relating to overservicing in private and public hospitals.

The Committee views under-servicing of patients by medical practitioners with similar concern. Under-servicing refers to claims for a service which was not delivered or provided or the lack of attention to a patient.

Accordingly the Committee recommends that there be a maximum exchange of information between the two Governments so that the Health Commission, Medical Board of Victoria and any other appropriate body may fully consider and act upon such unethical or unacceptable practices by practitioners which could have a bearing upon their suitability for registration in Victoria.

## 9.6 Identification of Chief Executive Officers/Managers

The Committee is of the opinion that the name of the current Chief Executive Officer or Manager of each nursing and special accommodation home should be recorded with the Health Commission. This will enable the Health Commission to identify the person in charge of the day to day operation of the establishment and identify the involvement of these persons in other establishments.

## 9.7 Accreditation of private hospitals

In the interest of patient care, the Committee strongly supports and encourages private hospitals to attain accreditation status with the Australian Council on Hospital Standards .

## 9.8 Disclosure of all financial interests in private hospitals

The Committee believes that the problem of conflict of interest could also arise with persons other than medical practitioners who provide a service to patients in private hospitals and at the same time hold a notifiable interest in that private hospital.

The Committee is of the opinion that each private hospital when applying for registration or renewal of registration, must advise of all persons other than medical practitioners providing services to patients, who have a notifiable interest in that hospital.

## 10. RECOMMENDATION

10.1 It is recommended that the Medical Practitioners (Private Hospitals) Bill be amended to reflect the intent of the following paragraphs:-

- (a) Medical practitioners who have a notifiable interest in a private hospital in which they are referring a patient must inform that patient of the medical practitioners' notifiable interest. The medical practitioner is then to obtain the signature of that patient on a prescribed form which details the notifiable interest.

If the patient is unable to comprehend and sign the form then the authority and signature is to be obtained from a close relative or legal guardian or authorised representative of the Health Commission.

Provision should be made for emergency cases in which a delay would be detrimental to the health of a patient.

- (b) Where a patient decides not to be admitted to a particular hospital nominated by the practitioner, then the practitioner must either suggest an alternative hospital or refer the patient to another equivalent practitioner or to the original general practitioner for a second referral.
- (c) On admission to a private hospital, the patient or close relative/legal guardian or authorised representative of the Health Commission must sign a prescribed form stating that they have been informed of the notifiable interest the practitioner has in the hospital.
- (d) Private hospitals which have medical practitioners with a notifiable interest in that hospital are to make available upon request and on admission a suitable information sheet showing the names of all medical practitioners deemed to have a notifiable interest in that hospital, the amount and form of interest. A display board in the hospital foyer showing the names of medical practitioners with a notifiable interest is to be kept and updated.
- (e) The Health Commission is to be kept informed by the private hospital of all medical practitioners who have a notifiable interest in that hospital.

- (f) A monthly return of patients who have been referred to that hospital in which the medical practitioner has a notifiable interest must be sent to the Health Commission by the relevant hospital. It should show:-
- patient identification code.
  - name of referring medical practitioner.
  - name(s) of medical practitioner treating patient.
  - number of days admitted.
  - reason for admittance.

## 10.2 Assessment of statistics

The Committee recommends that after a 12 month period an analysis of the above statistics (items 1 (e) & (f)) be made by the Health Commission and a summary report presented to Parliament by the Minister of Health.

## 10.3 Prohibition of a medical practitioner from referring and treating patients to a particular hospital or having a notifiable interest in any private hospital

The Committee recommends that the Minister of Health includes in this Bill the authority to prohibit a medical practitioner found guilty of abuse from sending and treating patients to a particular private hospital or depending on the nature of the offence, to prohibit the medical practitioner whilst registered in this State from having a notifiable interest in any private hospital.

## 10.4 Definition of notifiable interest

The Committee recommends that the Bill should include within the definition of the term "notifiable interest" any direct or indirect use of hospitals for the purpose of maximising non-taxable cash flows and also include de jure and de facto relationships (see paragraph 5.2).

## 10.5 Matters outside the terms of reference

It is considered that the following matters should be referred to the relevant Ministers for consideration and response within six months:

### ATTORNEY - GENERAL

- Evaluation of evidence presented by Dr. J.B. Morley (see Paragraph 9.1)

### MINISTER OF CONSUMER AFFAIRS

- Need for general review by the Ministry of Consumer Affairs of inherent conflict of interest within professions and trades (see paragraph 9.4).

### MINISTER OF HEALTH

- Review of Medical Board (see paragraph 9.2).
- Continuation of Peer Review in hospitals (see paragraph 9.3).
- Over/Under-servicing and Medi-fraud information (see paragraph 9.5).
- Identification of Chief Executive Officers of hospitals and nursing homes (see paragraph 9.6).
- Accreditation of private hospitals (see paragraph 9.7).
- Disclosure of all financial interests in private hospitals (see paragraph 9.8).

Committee room  
11 May 1983

## 11. APPENDIX

### 11.1 Submissions received from:-

#### Government Departments, Authorities, Agencies

Department of Community Welfare Services, Victoria  
Health Advisory Council\*  
Health Commission of Victoria\*  
Medical Board of Victoria\*  
Ministry of Consumer Affairs\*

#### Other Institutions, Associations

American Medical International (Aust) Pty Ltd\*  
Australian Association of Surgeons\*  
Australian Medical Association\*  
Bethesda Hospital\*  
Community Hospitals Association  
Dandenong Valley Private Hospital (proposed)\*  
Delmont Private Hospital  
Doctors Reform Society\*  
Epworth Hospital  
Freemasons Hospital  
Joseph Banks Crescent Medical Centre  
Private Hospitals Association of Victoria\*  
Sherbourne Clinic Private Hospital  
The Melbourne Clinic\*  
The Private Geriatric Hospitals Association of Victoria\*  
The Royal Australian & New Zealand College of Psychiatrists\*  
Trentwood Private Hospital\*

#### Individuals

Dr. P. N. Cohen  
Mr. W. S. Hale\*  
Mr. G. Hardy  
Dr. E. N. Henry  
Mr. A. T. Kenos  
Dr. J. D. Mackellar  
Dr. I. A. McGoldrick\*  
Dr. J. B. Morley\*  
Professor L. J. Opit  
Dr. J. Scott

### 11.2 Evidence presented by Dr. I.A. McGoldrick

Following checking of evidence by Dr. I.A. McGoldrick, (pages 258 to 281 of the Minutes of Evidence), it was found to be misleading and unreliable and therefore the Committee cast doubt on its accuracy.

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\* Provided verbal evidence



SOCIAL DEVELOPMENT COMMITTEE

INTERIM REPORT UPON  
COMPLAINTS PROCEDURES  
AGAINST HEALTH SERVICES

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Ordered to be printed

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EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

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Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

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Tuesday, 31 May 1983

24. SOCIAL DEVELOPMENT COMMITTEE - The Honourable Evan Walker moved, by leave, That the Honourable K.I.M. Wright be discharged from attendance upon the Social Development Committee.

Question - put and resolved in the affirmative.

Ordered - That a message be sent to the Assembly acquainting them of the foregoing resolution and that a vacancy accordingly exists in the membership of that Committee.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

---

Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave and question - That, contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -  
- (Mr. Fordham) - put and agreed to.

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Wednesday, 1 June 1983

23. MESSAGE FROM THE LEGISLATIVE COUNCIL acquainting the Assembly that they have agreed to a resolution discharging the Honourable K.I.M. Wright from attendance upon the Social Development Committee and notifying that a vacancy accordingly exists in the membership of that Committee.

\* \* \* \* \*

25. SOCIAL DEVELOPMENT COMMITTEE - Motion made, by leave and question - That, Mr. Steggal be appointed a member of the Social Development Committee -  
- (Mr. Fordham) - put and agreed to.

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## REPORT

The SOCIAL DEVELOPMENT COMMITTEE, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:

### FUNCTIONS OF COMMITTEE

The functions of the Committee<sup>1</sup> are to inquire into, consider and report to the Parliament on -

- (a) any proposal matter or thing concerned with the social development of the people of the State;
- (b) how the life of individuals, families and communities in the State may be improved; and
- (c) the role of Government in promoting the welfare of the people of the State.

### TERMS OF REFERENCE

The Social Development Committee received a reference from the Governor in Council dated 26 October 1982 to inquire into, consider and report on -

- (a) The sources and the nature of complaints made by or on behalf of individual patients in relation to health services (whether public or private) received by such patients including complaints against health practitioners, groups or organizations, including matters related to fees and insurance.
- (b) The mechanisms which currently exist to deal with such complaints, to evaluate their availability to the public and to assess their efficiency individually and jointly as part of an integrated system of dealing with such complaints.

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Parliamentary Committees Act 1968, Section 4E.

- (c) To determine any and what changes are necessary to existing mechanisms and whether any other mechanism or mechanisms either in addition to, or in substitution for, existing mechanisms or any existing mechanism should be developed to receive complaints and to provide advice to both providers and clients in relation to these matters.
  
- (d) To recommend a model complaints mechanism, having regard to its composition, powers, duties, functions and jurisdiction and the best method of financing any present or proposed mechanisms, the adequacy of any redress that would be available to any individual who makes a complaint; the distinction between administrative and professional functions and administrative and judicial solutions, and possible preventive measures which may be taken to remove underlying causes of common complaints.

\* \* \* \* \*

### 3.0 BACKGROUND TO THE REPORT

Appropriate Government agencies and interested organisations were invited to make a submission to the Inquiry and general public comment sought through newspaper advertisements on the 5th and 9th of February 1983.

Submissions were received from the 149 individuals and organisations listed in Appendix 1 to the Report.

### 3.1 CHANGING COMMUNITY ATTITUDES

It has become apparent to the Committee that there is growing public awareness and demand for accountability across the spectrum of professions. Calls have been made for increased non-professional participation, and organisations such as consumers associations have been formed to protect and lobby for the rights of consumers. Such activities should be seen against a background of movements by communities to achieve greater control over significant areas of their lives.

### 3.2 NON-HEALTH PROFESSIONS AND CONSUMERS

In response to such changing values, various professions have formalised consumer participation within their structures. For example the New South Wales Law Reform Commission Report on the Legal Profession entitled "Complaints, Discipline and Professional Standards" (1982) proposed a model complaints procedure allowing increased public participation. In Victoria the Solicitors' Disciplinary Tribunal, constituted pursuant to the Legal Profession Practice (Solicitors Disciplinary Tribunal) Act 1978, includes on its panel not more than three persons (not being legal practitioners) appointed by the Attorney-General. Similarly, under the Legal Profession Practice (Discipline) Act 1978 the Barristers' Disciplinary Tribunal includes a person who is not a legal practitioner appointed by the Attorney-General.

Other professions have also recognised the significance of changing community attitudes. For example, under the Articles and By-laws of the Australian Society of Accountants, the Society has the facility to appoint non-members of the Society to their complaints handling Committee.

### 3.3 STATUTORY RECOGNITION OF CONSUMER RIGHTS

Governments too have become increasingly aware of significant trends in public opinion and a number of bodies have been set up reflecting these. For example, the office of Ombudsman was established, following a Report by the Statute Law Revision Committee, by the Ombudsman Act 1973 "to investigate any administrative action taken in any Government department or Public Statutory Body to which this Act applies". Following a sequence of inquiry and response, if justified, a report and recommendation is made to the authority responsible for the "misguided administrative action".

The Ministry of Consumer Affairs has responsibility for, amongst other bodies, the Consumer Affairs Bureau receiving complaints lodged by consumers, and the Small Claims Tribunals, dealing with claims lodged with the Tribunals up to a limit of \$1500.

### 3.4 CONSUMER COMPLAINTS REGARDING HEALTH SERVICES

It has been recognised for some years by succeeding governments that the current mechanisms for safeguarding consumer rights in the area of health care, and particularly with regard to the medical and paramedical professions, are fragmented, frequently duplicated and generally unsatisfactory. In the light of changing community attitudes, and in comparison with changes being made regarding public accountability in the non-health professions, the present procedures regarding complaints against health services have been criticised as being largely inadequate. The Committee accepts that there is a marked degree of public dissatisfaction with the avenues of complaint currently open to the recipients of health services. In the light of this the Committee

considers that there is a need for reform of the current situation, and that a coherent, clear, consistent and comprehensible system for dealing with health complaints is a necessity.

### 3.5 ORGANISATION OF REPORTS

#### 3.5.1 The Interim Report

This report is concerned with items (a), (b) and (c) of the Terms of Reference, together with one section of item (d). It thus reports on:

- the sources of complaints made by or on behalf of individual patients.
- the nature of complaints made by or on behalf of individual patients.
- a statement of the mechanisms which currently exist to deal with complaints.
- an evaluation and assessment of the current mechanisms in terms of their availability and efficiency.
- possible preventive measures which may be taken to remove underlying causes of common complaints.
- recommendations concerning necessary changes to existing mechanisms both as a short term improvement and development of existing mechanisms, and also as a necessary precondition to the establishment of a State-wide Health Complaints Authority.

#### 3.5.2 The Final Report (to be Tabled April 1984)

This report will be principally concerned with item (d) of the terms of reference. It will report on:

- a recommended model complaints mechanism, outlining its composition, powers, duties, functions and jurisdiction together with other related matters.

- a draft Bill to establish the proposed Health Complaints Authority.
- the results of an information-gathering research exercise conducted by the Committee.

#### 4.0 SOURCES OF COMPLAINTS

There are as many potential sources of complaints as there are participants or observers in health services.

##### 4.1 In practice the main sources of complaints are from:

- individual members of the public, such as patients, their relatives or friends;
- trade unions or employee associations to which the patient/client belongs;
- solicitors acting for individual patients/clients, for example in a personal injuries matter;
- other practitioners or associated service providers such as nurses or midwives; or
- third parties such as the Ombudsman or the Consumer Affairs Bureau with whom a complaint has been lodged.

##### 4.2 The Medical Board of Victoria has recently commenced coding its complaints received according to the source and nature of the complaint. Its 1981/82 annual report states:

"Complaints originate not only from patients but also from their relatives, other doctors, pharmacists, police, solicitors, employers, insurance companies, the Poisons Control Branch of the Health Commission of Victoria and from the Commonwealth Department of Health. In addition, complaints, most often originating from patients, are frequently directed to the Medical Board by the Minister, the Health Commission, the Australian Medical Association, the Department of Consumer Affairs and the Ombudsman." <sup>2</sup>

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2. Submission by The Medical Board of Victoria, p4.

4.3 The Royal Melbourne Hospital providing examples of third parties as sources of complaints, cited representations on behalf of complainants from a variety of statutory bodies such as:

- the Ombudsman,
- the Commissioner for Equal Opportunity,
- the Committee on Discrimination in Employment and Occupation, and
- the Commissioner of Community Relations.

4.4 As an example, the Pharmacy Board of Victoria reported on 32 complaints between 25.11.1981 and 20.12.1982; of these 21 were received directly from patients or relatives, 1 from a friend of a patient (via Poisons Division), 1 anonymous (via Poisons Division), 1 from a friend of a client (via the Drug Squad and Poisons Division), 1 from a client (via the Vice Squad), 1 from a patient (via the Poisons Division), 1 from a patient via a pharmacist, 3 anonymous or false identifications were given, 1 complaint came from a neighbour and 1 from the patient's R.S.L. representatives.

4.5 A health service may be the target of a complaint, but it may also consider that it has the professional obligation to take on the role of patients' advocate, as seen, for example, in the adoption by the Royal Australian Nursing Federation (Victorian Branch) of the "Patient's Bill of Rights" as a matter of policy.

4.6 Between one and two hundred complaints per year are brought to the notice of the Health Commission. For example there is a steady stream of letters of complaint addressed to such public figures as the Premier, the Minister of Health, local Members of Parliament and the Chairman of the Health Commission, and these are generally directed to the Health Commission.

## 5.0 THE NATURE OF COMPLAINTS

The nature of complaints varies greatly and many complaints are quite unique. However, it is possible to group complaints into broad categories.

## 5.1 COMMUNICATION

- 5.1.1 Most submissions to the Committee noted both as a source and type of complaint poor communication between providers and recipients of health care. While this is clearly a highly significant factor in many of the situations currently cited as causes of complaint, the Committee emphasises that in many cases it is inadequate for service providers to blame "communication breakdown" and then to propose "clearing the communication channels" as a solution. In fact the Committee was presented with evidence indicating that the existing complaints handling structures protect the status quo and existing entrenched positions. Confusing advice and incomprehensible jargon serves to preserve professional mystique and bewilder patients, which in turn restricts the pursuit of a legitimate complaint.
- 5.1.2 Communication involves both verbal and written advice to patients or clients, the use of standard forms on admission to institutions such as hospitals and doctors' surgeries, together with matters of procedure and treatment.
- 5.1.3 The Ministry of Consumer Affairs pointed out that many complaints it received regarding health services require only clarification about such matters as fees and tables.
- 5.1.4 Many of the submissions received from hospitals and other health care institutions nominate "genuine misunderstanding" as being the cause of the major proportion of complaints received. While the Committee notes that staff may make efforts to convey the meaning of services to patients and visitors, it remains of the opinion that health service providers are responsible for communicating the nature and extent of their services to the recipients of such services and that they must accept the responsibility of putting their house in order to eliminate misunderstandings.

## 5.2 TREATMENT

Under the general heading of "treatment" a number of broad areas of complaint have been identified:

### 5.2.1 Delays in Providing the Service.

The Australian Medical Association, (AMA), Victorian Branch, notes that complaints are received regarding:

- the time lag between the request for appointment and the time of appointment;
- the delay in seeing a patient at the appointed time;
- delays in visiting a patient at home when a home visit has been requested.

A further point is noted in the submission of the Medical Board that:

- unreasonable delay in the provision of reports to statutory bodies and solicitors is a frequent source of complaint.

The Board comments that:

"Some doctors seem unaware that the provision of appropriate reports is part of their professional responsibilities and that their neglect may impede a patient in the pursuit of an entitlement and consequently add to the patient's stress and involve the patient in financial hardship." <sup>3</sup>

At the institutional level the Box Hill Hospital noted that:

- waiting times have been a constant source of aggravation to patients and their relatives in (this and other) hospitals for many years.

### 5.2.2 Diagnosis and Treatment

The Committee accepts that matters relating to clinical judgement, diagnosis and treatment are not simple and clear.

However, as a result of evidence placed before it by organisations and individuals the Committee is in agreement with the Medical Board that in some cases there is inadequate care bordering on negligence. Some registration boards have the power to investigate such allegations of professional incompetence or negligence.

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3. Submission by the Medical Board of Victoria, p6.

There is, however, no uniformity across professional boards in the matter of complaints concerning diagnosis and treatment. The Committee emphasises that it is in this very area that major problems occur regarding the public perception of conflict of interest situations, where Caesar is perceived to be judging Caesar. As the Salvation Army submission put it:

"At present we feel that in the face of complaints, the medical profession closes ranks to protect itself and is supported by the legal profession, the adversary system and professional jargon." 4

### 5.3 POOR INTERPERSONAL RELATIONS

To a considerable degree the Committee considers that many complaints regarding poor interpersonal relations are the result of factors such as insensitivity to cultural differences, lack of, and inadequate communication. In the case of recently deceased patients, the Medical Board conceded that doctors may underestimate grief reactions. A study by the Alfred Hospital of 52 letters of complaint over 1977-82 revealed that 18 per cent were concerned with staff attitudes, while the Box Hill Hospital figures of 41 written complaints for 1982 indicated just under 10 per cent concerned staff attitudes. Other associations, boards, societies, colleges and federations all indicate that staff and patient/client interaction provides opportunity for complaint, and this Committee has detected both potential and real public dissatisfaction in the area of social interaction between the providers and recipients of health care.

### 5.4 ALLEGATIONS OF ILLEGAL AND CRIMINAL ACTS

The Committee notes that in some cases complaints may arise through activities which may break the law, or approach illegality. The Medical Board, for example, notes the problems of the misuse of drugs of addiction, and the prescribing of drugs of addiction to known or suspected drug addicts. The Committee is also aware of the problems of over-servicing and the

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4. Submission by The Salvation Army, p1.

making of fraudulent claims, together with the problems associated with false, misleading or inadequate certification, for example, certifying fitness or otherwise for work under the "28-day notices" in respect of conditions compensatable under the Workers Compensation Act 1958.

## 5.5 FEES

The Committee considers that many of the complaints regarding fees could be avoided if there was full discussion with patients/clients before treatment rather than after the bill is sent. The AMA submits that complaints about fees usually arise after the patient has claimed a refund from his health insurance fund and is disenchanted with the size of the gap between the fees and refund.

However, the Committee agrees with the Ombudsman that:

"Patients are locked into a system of often being referred to a specialist or hospital with no advice as to charges and the relation of these charges to health benefits. Many practitioners say they are unaware of the charges, which vary considerably. I do not accept that this is reasonable." <sup>5</sup>

5.5.1 The Committee believes that those who hold themselves out to be providing a health service should also provide full information regarding fees and charges to their patients/clients. Because of the vulnerable psychological condition of those receiving health care and the esteem and high status accorded most health practitioners, it is particularly important for this vital information to be conveyed to health care recipients. Provision of health services is not a classical free enterprise market.

5.5.2 The Committee is concerned with the evidence provided by the Ministry of Consumer Affairs regarding the relatively high number of complaints received about the dental profession, which it seeks to explain as being caused by the lack of set charges for dental services, and the wide range of charges made by members of that profession. <sup>6</sup> The Committee

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5. Submission by The Ombudsman, p5

6. Submission by Ministry of Consumer Affairs, 18/4/83, p2.

supports the proposal made in the 1979 Annual Report of the Ministry of Consumer Affairs that dentists should display a scale of charges in their waiting rooms and thus provide information to their clients.

5.5.3 The Australian Dental Association (Victorian Branch) submitted that complaints regarding fees and health insurance related to the low health insurance rebates compared with the total costs of services. In defence of the range of individual item fees, the Association pointed out that:

"Health funds do not cater for a higher-than-average fee which can arise in cases of unusual or complex treatment, and which is not reflected in the coding systems. In addition, rebates on specialist procedures, which naturally carry a higher fee, are set by the Funds at the same level as those for general practice fees." <sup>7</sup>

## 5.6 HEALTH FUNDS

5.6.1 The Committee, while noting the comment of the Health Benefits Council that the largest factor contributing to public confusion and invalid expectations with regard to health benefits is the "somewhat incredible and certainly unprecedented degree of change and upheaval in health insurance legislation and practice which has occurred over the last decade", <sup>8</sup> considers that there are serious grounds for concern regarding the operation of health funds. The Ministry of Consumer Affairs noted seven main categories of complaints against health funds:

- the size of refunds
- refusal by the fund to refund
- bad advice given to consumers about the cover best suited to their needs
- disputes over what is considered a pre-existing illness
- reduction of refunds for example from 100 per cent to 75 per cent for long standing illness

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7. Submission by Australian Dental Association (Victorian Branch), p3.

8. Submission by Health Benefits Council, p2.

- refunds for "social" or cosmetic operations reduced or refused
- payments in advance for 12 months do not exclude the consumer from having to pay an increase if charges are raised half-way through the 12 month period.

5.6.2 The Committee also noted that complaints against health funds emanate from a variety of sources besides the public contributors, for example, chemist agents, who play a role in the administration of members' funds. Hospitals are also involved, for example, the submission from the Salvation Army Bethesda Hospital pointed out that the complexities of health insurance and the fine print in the rules are not understood by the majority of contributors to the health funds and that patients may feel they are powerless in the face of such bureaucratic structures. Most complaints received by this hospital relate to misunderstandings as to the level of cover given by the funds. The impact on the hospitals of the apparent arbitrary non-negotiable rulings of the health insurance funds is that the hospitals and the patients need to come to a mutual arrangement to deal with unpaid accounts.

5.6.3 The Committee recognises that the health insurance industry is a service industry and thus is constrained by the factors of membership satisfaction and loyalty. However, it believes the funds themselves have the responsibility to remove the sources of genuine misunderstanding or lack of appreciation of contractual situations which are nominated as the sources of many complaints. Their failure to communicate policies and fine print details to their members is clearly the source of many complaints and much genuine personal financial disappointment or hardship.

5.7 As an example of written complaints received and considered at an institutional level the Box Hill Hospital provided a summary of complaints for 1982. An extract is provided in Appendix 2 as an illustration.

## 6.0 CURRENT COMPLAINT MECHANISMS

### 6.1. THE POINT OF SERVICE

By far the largest number of complaints are lodged at the service delivery and institutional level. These range from the most trivial to the more serious. From the limited data available it appears that the procedures available at the industry level may vary from informal oral advice with no written records kept, to the more formal procedures instituted by several large hospitals.

### 6.2 THE OMBUDSMAN

The office of the Victorian Ombudsman was established in October, 1973 (Ombudsman Act 1973). The principal function of the Ombudsman is to investigate any administrative action taken in any Government Department or Public Statutory Body to which the Act applies. In addition to determining whether a complaint is justified, the Ombudsman can recommend a particular course of action to the principal officer of the body concerned to correct or prevent the situation complained of recurring, with a copy of his report to the responsible Minister. Failing a satisfactory outcome the Ombudsman may pursue the matter to the Governor in Council, and finally to the Parliament. Currently the Ombudsman makes his report half-yearly to the Parliament.

6.2.1 The Ombudsman does quite clearly have a legislative ability to handle complaints relating to administrative matters arising in Government or semi-Government institutions. Thus he can enquire, for example, into complaints against the Health Commission, the Medical or Dental Boards of Victoria and public hospitals. The Ombudsman cannot enquire into private hospitals and private sections of public hospitals.

### 6.3 THE MINISTRY OF CONSUMER AFFAIRS

Legislation designed to protect consumers has been enacted over nearly two decades and the Ministry of Consumer Affairs is theoretically able to

investigate most health care complaints. In the resolution of what it terms "professional complaints" the Ministry requires a high degree of consultation with associations representing the professions.

6.3.1 In both written and oral submissions the Ministry advocated that it should act as a "clearing house" forwarding complaints to the relevant professional bodies, while retaining a supervisory role to ensure that any peer review of professional conduct is, and is seen by consumers to be, proper and unbiased.

6.3.2 The Small Claims Tribunal has some jurisdiction over fees, although the extent to which it can apply its powers is far from clear and it has become apparent that the Tribunal is reluctant to proceed on matters involving professional services. The Tribunal has been operating for seven years and its decisions are final and binding on all parties to the proceedings. The only right of appeal is to the Supreme Court on the grounds that the Tribunal had no jurisdiction to take proceedings or that natural justice was denied.

#### 6.4 THE HEALTH COMMISSION

The present complaint systems and procedures vary according to the four Divisions of the Health Commission, i.e. Hospitals, Public Health, Mental Health and Mental Retardation.

##### 6.4.1 Hospitals Division

This Division has responsibility for all Victorian hospitals and nursing homes and community health centres. The Health Commission stated that:

"All hospitals have internal procedures for dealing with complaints, however, the degree of sophistication of these systems varies markedly." <sup>9</sup>

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9. Submission by Chairman of the Health Commission, p2.

#### 6.4.2 Public Health Division

This Division has a wide range of functions ranging from service delivery (e.g. School Dental Service, Tuberculosis) to inspectorial, advisory and regulatory functions (e.g. Special Accommodation, Poisons). The Health Commission stated that:

"Complaints in these areas are generally dealt with satisfactorily at local level either through written or verbal advice to the complaint (sic)." <sup>10</sup>

#### 6.4.3 Mental Health Division

This Division has a primary service delivery function via State-run psychiatric institutions and related services. The Health Commission stated that:

"The Mental Health Division is in somewhat of a special position regarding medical complaints due to the nature of its clientele. Many patients with psychiatric illnesses are unable to comprehend the exact state of their health and complain that they have been unnecessarily or wrongly committed and/or treated. Others may present with frivolous or vexatious complaints.

All complaints in the mental health area which are of a professional nature are dealt with by the Chief Medical Officer in writing, or if appropriate, in person. Many complaints are also dealt with at institutional level." <sup>11</sup>

There is a proposal to set up Review Tribunals and Guardianship Boards to strengthen existing mechanisms, the former to provide a vehicle for direct receipt of complaints, the latter would have a routine review function. This proposal is contained in the Report of the Consultative Council on Review of Mental Health Legislation presented to the Minister of Health, December 1981. This proposal is at the legal drafting and consideration stage.

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10. Submission by Chairman of the Health Commission, pp.1-2.

11. Submission by Chairman of the Health Commission, p2.

#### 6.4.4 Mental Retardation Division

This Division also has a major responsibility for health service delivery. Complaints are usually dealt with at the institutional level.

#### 6.5 STATUTORY BODIES

A number of licensing boards and registration bodies for health care professionals are located within the offices of the Health Commission and are responsible to the Minister of Health. Complaints may be made directly to these bodies. These bodies are:

1. Medical Board of Victoria.
2. Specialist Practitioners Qualification Committee of the Medical Board.
3. Dental Board of Victoria.
4. Specialist Practitioners Qualification Committee of the Dental Board.
5. Advanced Dental Technicians Qualifications Board.
6. Dental Technicians Licensing Committee.
7. Chiropractors and Osteopaths Registration Board.
8. Chiropodists Registration Board.
9. Dietitians Registration Board.
10. Optometrists Registration Board.
11. Pharmacy Board.
12. Physiotherapists Registration Board.
13. Victorian Nursing Council.
14. Victorian Psychological Council.

6.5.1 In general terms these bodies establish standards and are required to ensure that no person is registered to practise unless he/she meets the standards of that registration body. Most bodies have the power to remove a person's registration if for some reason that person is no longer obviously competent to practise.

## 6.6 PROFESSIONAL ASSOCIATIONS

Those who provide health services and care have, in most instances, formed professional associations or societies. Most of these associations have a "Code of Ethics" or a "Legal and Ethics Sub-committee" or similar statement and organisation. Since, in the public mind, these associations are frequently the best known or most widely publicised, they receive a considerable volume of complaints regarding their services. They are, in many cases, focal points for the professions, and as such, attract complaints from many sources.

6.6.1 The associations have a variety of mechanisms set up to handle complaints. They are concerned with the public standing of their profession and may advise and make recommendations, however they lack statutory powers to discipline and order restitution.

6.6.2 From the evidence presented to the Committee it appears that the complaints handling procedures are typically informal, often with inquiries or investigations conducted orally, and with this process unavailable for scrutiny by the complainant. For some associations procedures have been, at least until recently, very casual.

## 6.7 VOLUNTARY ASSOCIATIONS

A number of groups have been formed on an informal or ad hoc basis and are concerned with particular groups or categories of health services. For example, "Regional Accommodation Team Services" which was set up by a number of workers from health and welfare agencies to examine the problem

of finding suitable sheltered accommodation; "New DEAL for the Handicapped" concerned with people requiring long-term health care; the Yooralla Society; the Salvation Army; the Multiple Sclerosis Society; and many others.

6.7.1 Since most of these voluntary associations have no statutory powers, they typically rely on a process of persuasion or publicity as their complaints procedure.

## 6.8 THE LEGAL SYSTEM

The existing system of justice has evolved so that the Courts act to determine whether a citizen who alleges he has been negligently treated is justified in that claim, the outcome being related to an assessment of damage. While the legal system is clearly an important mechanism for dealing with complaints courts do not keep the statistics necessary for a fuller understanding of their role in the overall complaints mechanism system. It would appear that very few cases get into court, as the vast majority are settled beforehand.

## 6.9 PUBLIC FIGURES

Many public figures have found themselves the recipients of complaints about health services, such as the Premier, local Members of Parliament, The Minister of Health, The Chairman of the Health Commission and others.

## 7.0 CRITICISMS OF THE CURRENT COMPLAINTS SYSTEMS AND PROCEDURES

The major features and criticisms of the current mechanisms, systems and procedures dealing with complaints are:

### 7.1 LACK OF INFORMATION

The low numbers of registered complaints and the lack of data presented in evidence to the Committee does not in the opinion of the Committee provide overwhelming evidence that there is general public approval of the current system.

The Committee recognises that most health services in Victoria are provided by well trained persons of integrity and competence, and believes that the professional standards of the overwhelming majority of health service practitioners in the State are very high indeed.

However, it also recognises that the present mechanisms for assessing the sources and nature of complaints fail to provide a true and accurate picture.

Far from providing a cause for complacency, the Committee believes that the current figures may well reveal a lack of confidence in the system, a lack of knowledge of the mechanisms currently in place, a fear of reprisals (particularly in the case of the elderly infirm), a fear of litigation and cost, and a general attrition of motivation by bureaucratic delay, obstruction and buck-passing.

#### 7.1.1 Lack of Comprehensive Data

In the course of its inquiry the Committee was faced repeatedly with the problem of the lack of any reliable State-wide statistics concerning complaints in relation to health services. For a variety of reasons there is no way of determining, within acceptable limits of accuracy, how many complaints are made regarding health services, from whom or what groups they derive, and the nature of such complaints.

There is no systematic procedure for the recording and the reporting of complaints. There is no one Board or Authority which knows of the level of complaints, or which has the responsibility to collect or collate such data.

#### 7.1.2 Written Versus Oral Complaints

One of the reasons for this lack of information is the difference in the reporting, and treatment of written vis-a-vis oral complaints. Many statutory and professional bodies insist on a written complaint before

proceeding with their idiosyncratic mechanisms of inquiry. This places at a disadvantage those who lack the skills, confidence, possession of English, physical or mental abilities to state their complaints in writing.

### 7.1.3 Lack of Systematic Procedures

There is no systematic procedure for dealing with complaints about health service provision in the private sector. There is also no commonly accepted system of recording and reporting the sources, nature, recommendations and action taken in regard to complaints within the public health sector itself. For example, the large and small public hospitals do not have a common procedure laid down for the receipt, investigation and evaluation of complaints.

### 7.1.4 Lack of a Central Register in Hospitals

Details of established systems for handling complaints were received from the Box Hill Hospital and the Royal Melbourne Hospital.

However, a recent journal article (Australian Health Review, Vol. 6, No. 1, Feb. 1983) describing the development of a formal complaints procedure at the Alfred Hospital, Melbourne, provided a scenario which Committee members consider may be all too familiar in hospitals both small and large, public and private. The article details the major problem of the lack of a central register of complaints and lack of documentation, particularly about action taken and follow-up required. In lieu of a documented policy for dealing with complaints an informal system had developed. Verbal complaints, usually addressed to senior administration, medical or nursing officers, usually lacked documentation about the complaint, investigation, action taken and nature of reply. Written complaints were dealt with and filed in various records by various senior officers with no centralised register. As a result of investigation this hospital now has a formal procedure for handling complaints, incorporating a central record of all complaints received, investigations and remedial action taken.

### 7.1.5 Variety of Institutions, Organisations, Groups and Individuals (both licenced and unlicenced) involved in health care

The extensive scope of the terms of reference of the inquiry enabled the Committee to investigate the many facets of health service delivery. For example, matters related to fees and insurance were included with matters concerning clinical judgments of practitioners.

The scope for potential complaints within such a wide ambit is enormous and was exemplified by the variety of individual associations and bodies involved in the inquiry. The variety of data-gathering mechanisms within such a diverse group, means that there is no exact picture of the sources and nature of complaints made.

## 7.2 POOR COMMUNICATION

The Committee is strongly of the opinion that clarity must be achieved when giving instructions, advice and bureaucratic forms to the patient or client. While many written instructions are meaningful to practitioners, they are confusing to patients or clients. Action is necessary to correct the plethora of confusing forms and documents. Evidence to the Committee indicates that not all professional providers of health care communicate fully and completely with their patients or clients.

### 7.2.1 Obscurity of Complaints Procedures

The current mechanisms are obscure and frequently incomprehensible. Not only may the nature of the health services provided be misunderstood, but also the possible procedures for complaint may be entirely unclear.

### 7.2.2 Barriers for Immigrant Groups

The submission received from the Victorian Ethnic Affairs Commission noted that as of June 1981 the overseas born component of Melbourne's population

stood at 28 per cent, and that 19 per cent of the population were born in non-English speaking countries. Distinctive problems confront many such members of the community in seeking health services, such as the language barrier, the cultural barrier and the stigmatisation barrier. Examples of such barriers were provided by the Commission:

"One Turkish welfare worker reported that she had received many complaints from clients regarding the attitude of doctors towards interpreters. It was felt that doctors were reluctant to discuss in any depth with the interpreter the nature or the possible outcome of a particular affliction. The clients were unsure as to how to go about lodging a formal complaint and were also fearful of any repercussions which might affect their future doctor/patient relationships." 12

In a study prepared by the Health Services Research Group in 1979, which predominantly sampled non-English speaking migrants, it was found that 58% of the interviewees had, on at least one occasion, been unhappy with the services provided by a doctor. The majority of complaints were concerned with interpersonal aspects of the encounter or misdiagnosis.

"You can't trust them they don't tell you enough.....They won't look at you when you talk".  
"The doctor was disinterested and took a week to realize she had a fractured jaw". 13

There was a general reluctance expressed to make formal complaints arising from the treatment of nervous disorders for fear of being defined as "crazy".

Perhaps the most thought-provoking message of the above study is that:

"...migrants identify their health complaints with inadequacies in the health system. Poor treatment (either rudeness or misdiagnosis) is seen as being a part of the Australian health system. They therefore see little value in making formal complaints through a bureaucratic board." 14

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12. Submission by Ethnic Affairs Commission, p3.  
13. Submission by Ethnic Affairs Commission, p4.  
14. Submission by Ethnic Affairs Commission, p4.

### 7.2.3 Immigrant Occupation Health

The submission received from representatives of non-English speaking migrants in the trade union movement pointed out the problems faced by this group in their working lives. For example, Ms. S. Panayis of the Trade Union Migrant Workers Centre stated that:

"Migrant women, because of the type of work they do under strict regimental systems for a quota or piecework, either on assembly lines or as machinists, are always tired and always have a quota to fill. This is the cause of a lot of problems, one major occupational problem is tenosynovitis, the repetitive strain injury. With this problem they face further problems as far as trying to get workers compensation is concerned, and some sort of recognition that this is a work related problem. There are some instances of women complaining about the treatment they receive from doctors, particularly insurance company doctors. They build up this incredible fear of insurance company doctors because of the experiences of fellow workers. Many times they go along to the appointment and an interpreter should be there to interpret for them. Many times the interpreter does not appear and other times they might send an Italian interpreter to interpret for a Spanish person.

THE CHAIRMAN: Who is "they"?

MS. PANAYIS: The insurance companies. The consultation will still go ahead. Many times arrangements are made for interpreters to attend and they do not attend, but still the consultation will go ahead without an interpreter. Many times women will say "I do not think he believed me". The doctor will make these insinuations and say "This condition is all in the mind and they should go home and tell their husbands to get employment". They say that the problem is in the home and not an occupational one.

There is another instance of sexual harassment where a woman with a hand condition which is a repetitive strain injury was told to almost undress completely to have her arm examined. She was very fearful and did not know what to do, because she thought that her workers compensation case would be in jeopardy if she refused. There are all these sorts of instances and attitudes on the part of doctors not believing what they were told about the pain. There are also cases of doctors being impatient with migrant workers in having to use an interpreter, and many times the consultation taking longer for that reason." 15

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15. Minutes of evidence, pp211-12.

The point concerning the close relationship between health service providers and insurance companies or employers was further illustrated by Mr. J. Corsetti, Health and Safety Officer, A.M.F.S.U:

MR CORSETTI:" I have only come off the shop floor recently and have taken the position of Health and Safety Officer, but in that period many instances have come to my attention regarding doctors. I can speak of when I was on the shop floor. I came from the manufacturing industry which was comprised of roughly 90 per cent of migrant people. We had a company nurse, not even a doctor, and it was always drummed into us if anybody had complaints they were to see the nurse. That nurse was an English speaking person so on the job we had all these problems with the migrants.

I agree entirely with what Mr. Micallef said about them not knowing their rights - that they have the right to see their own doctor if they wish. It was drummed into them constantly that they have to see the Company person. These people would not go to that person, or if they did they were intimidated because very rarely did they have interpreters for all these migrants on the job. Consequently the people did not bring up the complaints and they kept on working with an injury, and that aggravated the situation. Most of the time they are just told to go back on the job anyway, so it is made worse. There were no interpreters whatsoever when we were on the job so that they had to try and indicate by signs where they were injured and they could not do it adequately." 16.

#### 7.2.4 Responsibility of Health Care Providers

The Committee believes that the problems of education and culture are by no means simply concerned with the lack of adequate education or relevant cultural understanding of the general public. To a large extent those who are responsible for the current complaints system are isolated within a professional hierarchy and are unaware, have forgotten or have no understanding of the day-to-day existence of those members of society who are vulnerable on physical, social, psychological or financial grounds.

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16. Minutes of evidence, pp212-13.

As far as the medical profession is concerned the Medical Board of Victoria submitted that:

"Many complaints arise as a result of a breakdown in communication between patient and doctor. This may be reflected in disagreement over such matters as advice given, the outcome of treatment, the appropriateness of accounts, etc. Frequently, doctors are portrayed by the complainant as being in too great a hurry to explain or to pay attention to the patient's symptoms or as displaying indifference, arrogance or ignorance. In replying to such complaints, many doctors are surprised, upset or aggrieved and may blame the patient. The Board believes that doctors, in view of their professional training, should be able to establish adequate communication with the patients in most circumstances." 17

### 7.3 THE POINT OF SERVICE

The Committee considers that it is entirely appropriate that, in the vast majority of cases, the large number of relatively trivial complaints should be dealt with at the industry level. They may be dealt with at this level expeditiously, and to the satisfaction of all. However, there are a number of major problems with the procedures currently available for dealing with complaints at this level.

#### 7.3.1 Current Fragmented System

In general those who provide health services do not, or are not able to, furnish a ready explanation of complaints procedures available to members of the public who feel aggrieved. For example, the Ombudsman noted the difficulty of determining to whom a complaint should be made in the case of medical treatment at a private hospital by a non-member of the A M A

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17. Submission by Medical Board of Victoria, p5.

### 7.3.2 Lack of Uniformity

Some hospitals such as the Austin Hospital, the Royal Melbourne Hospital and the Box Hill Hospital have a well-developed complaints procedure, others have a very poorly developed system for dealing with complaints. The Committee notes the comment by the Health Commission that all hospitals have internal procedures for dealing with complaints but that the degree of sophistication of these systems varies markedly. In addition:

"There is a definite need in this area for the production of model procedures for dealing with complaints to ensure that firstly, the public are informed that the facilities exist for them to lodge a complaint, and secondly that information gathered as a result of complaints is passed to senior management." 18

### 7.3.3 Vulnerability of Those in Long-term Health Care

The case histories submitted to the Committee and quoted below suggest that it is not, as some institutions and organisations maintain, the beginning and the end of the matter to have complaints dealt with at the point of service.

There are many instances where this may be entirely inappropriate, and in planning a model complaints authority this fact has been taken into account.

The Committee notes that:

- a long-term patient faces special difficulties in finding alternative health care, be it accommodation or doctor, and the only alternative to inadequate care may be no care at all.
- those whose condition makes them require care (for example the intellectually disabled, the psychiatrically ill, the severely physically disabled, the frail aged, and abandoned children) may also find their condition makes it extremely difficult for them to complain about the quality of that care.

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18 Submission by Chairman of the Health Commission, p2.

- those in long-term care often do not have families in close contact and may become isolated from the community. In such cases those who are able to complain about their care often have nobody to complain to, except the staff responsible for providing it.

The following case history serves to illustrate some of the problems of complaining about maltreatment in hospital:

CASE HISTORY:

"SUMMARY OF CASE OF X: PROBLEM OF COMPLAINING ABOUT MALTREATMENT IN HOSPITAL"

X is a sixty-one year old gentleman who suffered a stroke in 1981. He is a migrant, speaks little English and has no family in Australia. He was a patient in Prince Henry's Hospital from 9/11/81 to 1/12/81. On 1/12/81 he was transferred to Heatherton Hospital, awaiting permanent placement. He had an indwelling permanent catheter. During this time he was noted to have a swollen, gangrenous penis surrounding his catheter and he was returned to Prince Henry's Hospital on 23/12/81 and on 31/12/81 had a penile amputation and urethrostomy. He was placed in Caulfield Hospital permanently in April, 1982.

It is hard to imagine a more demoralising fate for a man than to have his penis amputated. It certainly is extremely uncommon for this situation to arise, if a catheter is looked after properly. For this reason, staff felt there might be some justification for a damages case on behalf of the patient. Therefore, in April, 1982, the social worker involved raised this matter with the Public Trust Office who was looking after the patient's affairs.

Twelve months later, no action has been taken and to our knowledge no legal opinion has been sought. This raises the questions:

- (i) Actual financial compensation would help the gentleman marginally as he depends only on his pension. However, all his needs are met in the State hospital in which he now has to live

permanently. Therefore, a common law action, although it seems to be the only kind of redress is not particularly appropriate.

- (ii) It is not possible for staff at one hospital to lodge a complaint anywhere about what they think may have been possible negligence about staff at another and for this to be dealt with in any kind of confidential or objective way.
- (iii) In this particular case, like many others, the patient's only advocate is the Public Trustee who appears to take a very conservative approach to difficult issues, such as suing hospitals for negligence whereas some lawyers in private practice will take a fairly aggressive approach, which is possibly more in the client's interest. As the patient is under the Public Trustee and has no relatives, he is not able to give instructions, the Public Trustee must give instructions and they choose a solicitor so in this case there appears to be nowhere for this gentleman to complain to." 19

#### 7.3.4 Occasions for By-passing the Point of Service

A number of case histories were presented to the Committee which indicated the importance of ensuring that any proposed complaints system and procedure was both fully available to all recipients of health services and also efficient and speedy in its action.

Cases presented below illustrate the need for improvements in current procedures and the scope for a proposed authority.

##### "CASE 1

A, left a quadriplegic with no speech after an accident, has been living in a private hospital for two years. The hospital has recently placed quite unjustified restrictions and bans on A's visitors, including his fiancée. A's parents and his lawyers have protested on his behalf, only to be told that if they don't accept the restrictions A will be discharged immediately. A is tube fed and classed as an intensive care patient.

A's family and his solicitor have been making every effort for the past 6 months to obtain a bed for him elsewhere. In the meantime he has been cut off totally from most of his friends and is understandably upset and depressed.

#### CASE 2

A government facility has no suitable chairs for its patients to sit on. The patients, all physically disabled, have to lie on the floor all day and their physical condition deteriorates in consequence. The physiotherapist repeatedly approaches the superintendent and asks for chairs. Submissions are made to various government committees (such as this) drawing attention to the lack of chairs, and the complaint is invariably received sympathetically. The Schools Commission, approached repeatedly to buy chairs for the children, responds that provision of furniture is a Health Department responsibility. Five years after the process of submissions started (and fifteen years after the institution opened) there are still no chairs. By this time the permanent deformities which residents have acquired through lying on the floor for years makes the provision of seating much harder than it was originally. Nowhere is it stated that a long term care facility should have enough suitable chairs to allow each of its patients to sit down, however basic a requirement this would seem.

#### CASE 3

A young physically disabled woman, B, lives in a State retardation institution to which she was admitted as a baby. B complains to the Director of Nursing that a ward assistant has hit and maltreated her. B's complaint is supported by a nursing sister who witnessed the incident and went to her aid. The Director of Nursing places B directly in the charge of the ward assistant in question, a large and very strong woman just discharged from a psychiatric hospital. B is frightened - she is a quadriplegic - and complains to the Administration, who state that this has been done on purpose to see if the ward assistant would attack B again and give a firmer ground for disciplinary action.

After a number of such incidents B asks the Director of Nursing to put her in contact with the Minister of Health (her physical disabilities make it impossible for her to mail a letter or use a phone herself). The Director of Nursing refuses to do so.

*B has a longstanding friendship with an Australian senator, who hears of her problems. The senator comes to visit her but is refused admission by the Director of Nursing.*

*B asks to see a lawyer and is in fact allowed to do so, once, in the presence of the hospital administration. When the lawyer indicates that he thinks B may have a case he is refused admission when he asks to see her again. B is confined to the institution to prevent her visiting the lawyer.*

*Concerned staff members are prevented from doing anything about B's plight because the bureaucratic structure then operating dictated that all complaints must be passed through the hospital administration before they will be considered by the relevant Health Commission Officers. As the complaints in this case are directly concerned with the administration there is considerable doubt that they are all passed on; certainly no action follows other than some harassment by the Director of Nursing of the staff who do try to complain." 20*

### 7.3.5 Inhibition of Staff Complaints

A health service practitioner may feel inhibited in providing evidence to support a patient complaint against another practitioner. Such an inhibition may arise through fear of retribution, loss of employment or reduced career prospects, or a reticence to criticise fellow professionals.

Submissions received from several sources (e.g. New DEAL for the Handicapped; Diamond Valley Childbirth Education Association; Australian Association of Social Workers) suggest that staff in institutions may have a justified fear of reprisals if they do try to complain on behalf of a patient. Clearly both patients and staff must be protected from reprisals if they do complain. As the October, 1982 Report from the House of Representatives Standing Committee on Expenditure ("In a Home or at Home") puts it:

"People who are unprotected in a nursing home are often afraid to raise their voices in anger or protest. This fear is the first thing to be overcome in devising some method of giving access to an appeal mechanism. Such a mechanism would also allow staff to express their complaints."

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20 Submission by New DEAL for the Handicapped.

Both the Ombudsman and the Australian Association of Social Workers (Victorian Branch) noted a further extension of the above problem of "professional inhibition" in relation to the Health Commission.

An example was given by the Association of Social Workers:

".....in June 1982 a 66 year old former patient of Caulfield Hospital died in a Special Accommodation House.

The hospital staff involved reported to the Special Accommodation House section of the Health Commission. The hospital staff were concerned that both the doctor and the proprietor of the Special Accommodation House had not taken sufficient steps to save the patient (perhaps because she was an acknowledged alcoholic). They also believed regulations had been infringed, ie:

- "407 The proprietor shall not cause, permit or allow to be accommodated in a special accommodation house -
- (c) any resident who is suffering from a condition such as would require him to be lodged in a hospital, nursing home, or institution administered by the Commission; or..."

What was thought to be a routine communication with colleagues elicited an "investigation" which looked like an attempt to defend all those involved, not to investigate a death impartially. The hospital staff member who wrote the original complaint was not interviewed. The doctor and Special Accommodation House owner were interviewed at length and their statements, which conflicted with the social worker's, accepted.

The hospital staff involved still believe that there was a large element of neglect involved in the death and that the proprietor infringed the Special Accommodation House regulations.

Their redress now would be to write to the Minister. However, this would then be passed down the line for the same staff to investigate.

The other alternative would be to pass this complaint on to the Ombudsman.

*The staff involved decided against this as their actions to this stage have been taken very personally by the Health Commission staff. They do not want to jeopardize their chances of a good working relationship in the future."* 21

### 7.3.6 Patient Well Being and Quality of Care

In its investigations the Committee used a broad definition of health care, in the belief that health care should not be restricted to physical facilities or physical care. Following from this the Committee was concerned to receive case history 1 above, revealing the deprivation of civil rights (the restriction or banning of visitors; the opening of mail by the administration). Such deprivations must not be imposed as punishments for making a complaint.

### 7.3.7 Private Nursing Homes and Special Accommodation Houses

The Committee was concerned to receive information alleging wide variations in quality of care offered by private nursing homes and special accommodation houses. The Report quoted in paragraph 7.3.5 ("In a Home or at Home") states, inter alia:

"In Victoria (it was said that) there has been concern for a long time that the facilities available to carry out effective inspections are inadequate. Workers who have been involved in the field of aged care for many years say that they know of establishments flouting regulations.

Complaints are not brought to the attention of authorities and there is no effective mechanism for this to happen."

The submission from Regional Accommodation Team Services voiced its concern with the quality of care in some nursing homes and special accommodation houses. The submission suggests that treatment of the

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21 Submission by the Australian Association of Social Workers, pp1-2.

patients - insanitary conditions, poor food, inadequate control of drugs, improper use of constraints (both tactile and medicinal), reprisals against those who complain and assaults on human dignity - falls short of what could be considered to be adequate care. The submission itemised the following examples of abuse ranging from seemingly small matters to grave neglect:

- . *"Lack of privacy - toileted in the lounge in front of other patients and visitors of both sexes.*
- . *No food in the pantry before a holiday.*
- . *Patients never being dressed or moved from the bedside for years.*
- . *Patients woken and bathed between midnight and 4 a.m. - so that night staff is fully utilized.*
- . *Patients found lying on newspapers to save linen.*
- . *Patients found severely undernourished.*
- . *Gross contraction of all limbs.*
- . *Multiple bedsores - so deep that muscle was exposed."* 22

The Committee did not investigate these allegations of abuse, since it considered its major role should be to investigate why such allegations had not been dealt with by the existing complaints mechanisms. In response to a newspaper report in The Sun of 16th August 1983 detailing the above examples of abuse, the Rest Homes and Special Accommodation Houses Association wrote to the Committee challenging these allegations, stating that:

"...residents have at least four sources to which they can address complaints, in addition to local parliament members, ombudsman etc., and these four sources are:-

1. The Special Accommodation House management or proprietors. You may feel assured that our members take complaints seriously. They have to, for several reasons, some of which are economic rather than legislative. For example a proprietor will want to protect the licence to operate, and to preserve the nonsubsidised income.

However, where it is the management itself which is to be the subject of any resident's complaint, then there are at least three other sources to which a resident can turn for effective help.

2. The Medical Practitioner

Each resident has access to their own doctor, and at no cost to the resident, a consultation can take place. It would be a foolish proprietor who ignored a doctor's serious complaint because much damage would take place to the proprietor's main asset, namely his goodwill.

3. The Social Worker

Social Workers can be influential. They often refer residents and they also help a resident find a new location if the resident feels need to move. Again, it would be a foolish proprietor who ignored a specific complaint from an informed social worker. Social Workers are readily available to all residents.

4. The Health Commission

We have no way of telling if Ms. Childs (of Regional Accommodation Team Services) is being accurately reported (in The Sun) when it is said in the newspaper article that the Health Department itself is maintaining that it cannot deal with complaints about standards because the Health Department lacks some legislation.

Our members are aware that the Health Department does in fact deal with some complaints. Perhaps it is that it doesn't need additional rules and regulations because of its powerful licensing sanction; and it would seem to us that to press for additional rules and regulations about complaints would only work to the benefit of our members by placing some limits on the authority of the Health Department on such issues." 23

The Committee's response to this submission is that

- Over the 12 months from 26/8/82 to 26/8/83 complaints were lodged against 78 out of the 270 Special Accommodation Houses,

23. Submission by the Rest Homes & Special Accommodation Houses Association, 22/8/83. p2.

- those in long-term health care in Special Accommodation Houses have particular problems (see 7.3.3 above),
- both the management and the medical practitioner may be themselves the subject of a resident's complaint and thus an interested party in any investigation,
- evidence was received outlining the restricted access and authority of social workers to investigate complaints such as the above.
- The Health Commission's complaints handling role in relation to Special Accommodation Houses needs clarification. The Special Accommodation House Section of the Commission is responsible for the annual renewal of licences and has a team of 5 staff to oversee 270 houses with over 5000 residents. Of these staff only 3 "advisers" were involved in investigating the 400 or so complaints received over the last year. These figures indicate that the Section lacks the resources to investigate complaints properly.

In addition, given that the 3 relevant Health Commission staff call themselves "advisers" rather than "inspectors" or "complaints investigators" there is some blurring of investigatory, inspectorial and supervisory roles. Further, there is no clearly laid out complaints mechanism and procedure for residents or their relatives to be aware of, and to follow.

### 7.3.8 Hospital Accreditation

The Committee notes the point made by the Victorian Hospitals Association Ltd. that surveyors from the Australian Council on Hospital Standards are required to review complaint-handling procedures and the response to specific complaints contained in hospital files as part of the surveys undertaken when both public and private hospitals seek accreditation.

However, the Committee doubts whether this is, as claimed by the V H A, an "important independent quality control mechanism" in relation to complaints handling as the decision to seek accreditation is voluntary and therefore not all hospitals comply with A C H S regulations. State and Federal laws do not require any hospital to seek accreditation.

#### 7.4 THE OMBUDSMAN

The effectiveness of this authority is limited due to the restricted nature of its jurisdiction.

##### 7.4.1 Private Health Care

The Ombudsman cannot enquire into complaints against private hospitals or medical or paramedical practitioners. Only a cumbersome and circuitous procedure is available to investigate aspects of the private health care sector for example:

- . if a complaint is made against private medical or paramedical practitioners, he can investigate the action taken by the appropriate registration board in investigating that complaint, and can evaluate whether the investigation by the authority has been thorough and impartial;
- . in respect of private hospitals, he can make enquiries of the Health Commission. However, the Ombudsman comments:

"...the Commission appears to have limited jurisdiction over these hospitals. This largely relates to registration, facilities provided and to a limited degree, standard of care and domestic services." 24

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24. Submission by The Ombudsman, p2.

#### 7.4.2 Clinical Judgements

The Ombudsman is unable to deal with complaints concerning actions taken in connection with the diagnosis of illness or the care or treatment of patients, if those actions were taken solely in consequence of the exercise of clinical judgement.

#### 7.5 THE MINISTRY OF CONSUMER AFFAIRS

There appears to be considerable lack of clarity both in the Ministry and amongst the general public regarding the jurisdiction of the Ministry of Consumer Affairs. The ambiguity lies in the term "goods and services", and whether professional matters are deemed to be a "service". In a verbal submission the Acting Director of the Ministry stated that:

"In 1982 the Consumer Affairs Council in its annual report recommended that the Small Claims Tribunal be given jurisdiction over complaints against the profession....

There is some difference of opinion as to whether the Tribunal already has jurisdiction over professional complaints. It is my view that it does not, although in fact on occasions it acts as if it does.

The Small Claims Tribunal Act defines a trader as a person who in the field of trade or commerce carries on a business of supplying goods or services.

There is a body of case law which indicates that the professions are not included in the description "trade or commerce". In fact there is a division of opinion amongst the referees. Some define trade or commerce to encompass professions; some do not." 25

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25. Minutes of Evidence, pp26-7.

### 7.5.1 Lack of Jurisdiction

The Ministry of Consumer Affairs has no jurisdiction over any of the statutory boards set up to register medical and paramedical practitioners. In general, judging from the small numbers of consumer complaints handled by the Ministry, this Department does not appear to function as a central arena for the resolution of health service complaints. In an oral submission to the Committee, the Acting Director of Consumer Affairs commented that he saw the Ministry's role as being largely one of referral with a "clearing-house" function.

### 7.5.2 Medical Fees

The Health Commission submitted that while it is understandable that the Ministry may be reluctant to become too deeply involved when complaints are made about fees charged,

"...in reality there is little difference in principle between a person complaining about fees charged by service providers in the health field, and a person with similar complaints in another field." 26

It appears that this point of view is not one that is fully shared by the Ministry Officers, since the Ministry's practice in handling complaints is:

"...generally to refer them directly to the medical practitioner for resolution. We do not try to resolve them ourselves". 27

As the Acting Director points out:

"Our experience is that the vast majority of these complaints have to do with the size of the account. As I list in my letter of the 18th April, the size of the account seems to be the most significant factor in complaints, and these matters are generally quite readily resolved by contact with the doctor." 28

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26. Submission by Chairman of the Health Commission, pp3-4.

27. Minutes of Evidence, p26.

28. Minutes of Evidence, p26.

## 7.6 THE HEALTH COMMISSION

The Committee is in substantial agreement with the overall statement made by the Chairman of the Health Commission regarding complaints procedures against health services:

"...I consider the present procedures to be generally inadequate in that there is firstly no well ordered sequence of avenues of action, and secondly, there is no ready explanation available to members of the public who feel aggrieved." 29

### 7.6.1 Inadequacies of Complaints Procedures under the Commission's Responsibility

The Commission was very open about the problems of the current grievance procedures available to the public within the ambit of the Commission's activities and responsibilities.

. the Public Health Division - while complaints may generally be dealt with satisfactorily, the Commission notes:

"...there is no systematisation of procedures and no built-in management information system whereby reports of complaints and their resolution are provided to management for purposes of performance feedback and any necessary improvements to procedures." 30

. the Hospitals Division - while all hospitals have internal procedures for dealing with complaints, the Commission notes:

"There is a definite need in this area for the production of model procedures for dealing with complaints to ensure that firstly, the public are informed that the facilities exist for them to lodge a complaint, and secondly that information gathered as a result of complaints is passed to senior management." 31

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29. Submission by Chairman of the Health Commission, 19/4/83.  
30. Submission by Chairman of the Health Commission, p2.  
31. Submission by Chairman of the Health Commission, p2.

. the Mental Health Division - since this division has a primary service delivery function conflicts may arise concerning other Health Commission functions such as inspectorial, advisory and regulatory functions. In addition, as the Commission notes, while:

"The rights of psychiatric patients to make complaints are protected by legislation ... in practice all patients in institutions may not be aware of these rights." 32

. the Mental Retardation Division - also with major responsibility for health service delivery, and also unsatisfactory both in the availability of complaints mechanisms to the public, and their exceptional clientele, and in their system efficiency. As the understated comment of the Health Commission puts it:

"Unfortunately, systems for dealing with complaints in institutions for the mentally retarded are generally poorly developed and complaints have often not been resolved to mutual satisfaction." 33

#### 7.6.2. The Bureaucratic Maze

The Committee was most concerned to receive evidence indicating the difficulty of gaining a resolution to situations worthy of a complaint, due largely to the lack of adequate regulations and various bureaucratic policies and practices.

The following case history serves to illustrate the difficulty that even those who have a good working knowledge of the structure of the Health Commission and Special Accommodation House regulations have in eliciting a satisfactory response from the Health Commission.

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32. Submission by Chairman of the Health Commission, p.2.

33. Submission by Chairman of the Health Commission, p.3.

CASE HISTORY:

"SUMMARY OF CASE Y: AN ELDERLY LADY SUFFERING SENILE DEMENTIA WHO HAD \$18,000 TAKEN BY A SPECIAL ACCOMMODATION HOUSE PROPRIETOR 18 MONTHS AGO.

In approximately December, 1981 an elderly migrant woman with severe memory problems was discharged from Hobsons Park Psychiatric Hospital, Traralgon. A cheque for \$18,000 was sent to her at a Special Accommodation House. The owner banked it in her own bank account.

This was discovered accidentally three months later when the lady was admitted to a public hospital. After initially denying knowledge of this, the owner later told the Public Trustee she had used the money for renovations and could not repay it.

In November, 1982, the Proprietor was ordered by a court to repay this money. This Proprietor is still running a Special Accommodation House (supervised by the Health Commission.)

A number of questions remain:

- (i) Why has this Proprietor not been charged with theft?
- (ii) How is it that the Special Accommodation House section of the Public Health Division of the Health Commission can allow this Proprietor to continue to run a Special Accommodation House?
- (iii) How is it that Mental Health could discharge a certified patient without notifying her family or making provision for protection of her finances.
- (iv) Why did the Public Trustee not notify the son or check where the old lady's cheque was banked?

Despite the fact that the son speaks English only as a second language and lives in the country, he has been very well organized in his attempts to have the above questions answered.

*He was unsuccessful with the Ombudsman, as whoever he talked to did not listen long enough to find out he had a legitimate complaint against the Health Commission as well as the Public Trustee. Therefore, he initially complained to Mr. Viney, Permanent Head, Law Department. None of the answers from "the top" - Mr. Cain or Mr. Roper, really follow through and solve the problem*

*Y's son has told me (a Social Worker) on the phone that he feels if he was a more important person he would be getting action, and I cannot help but believe he is right. The son and various social workers have spent literally hours on this problem. At this stage we have all given up." 34*

### 7.6.3 The Ineffectiveness of Current Procedures

The Committee wholeheartedly concurs with the Health Commission's criticism of the current complaints procedures in which it has a major responsibility and role. While it is clear that the Health Commission has as its major function that of an administrative organisation -which does not have a separate investigating section to deal with complaints -yet it still has a primary role in service delivery particularly in the Mental Health and Mental Retardation Divisions. It is in this sphere that the conflict between service delivery functions and inspectorial, regulatory, and advisory functions becomes clear.

As the Ombudsman comments:

*"The Health Commission is responsible for public hospitals and mental institutions and if it is the authority to investigate complaints against these bodies, it suffers in that it is not at arms length from the body complained about and the complaint could in fact show a lack of effective supervision." 35*

It is because of these conflicting functions that the Committee considers that the Health Commission would be an inappropriate body in which to establish any new health complaints authority.

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34. Submission of the Australian Association of Social Workers.

35. Submission by The Ombudsman, p5.

Indeed, the Health Commission argues that it should not take on this role and that a better use of existing systems is preferable.

## 7.7 STATUTORY BODIES

The jurisdiction, powers, resources, structure and functions of the various health professional registration bodies responsible to the Minister of Health vary greatly. For example, funds may be generated by fees or obtained from Consolidated Revenue; support staff may be employed and paid directly by the Board or be provided by the public service; some Boards have a charter to enquire into complaints related to professional standards (such as the Medical Board and Dental Board); others are restricted to little more than a registration function (such as the Chiropractors Board and Physiotherapists Board).

Advice from the Health Commission demonstrates the variations of roles and functions of the various Boards as follows:

- "Medical Board

This Board is staffed by public servants and the fees it receives are paid into Consolidated Revenue.

The Board's function is to maintain a register of medical practitioners, and to maintain standards of professional conduct. The Board is empowered to inquire into complaints and is obliged to provide an Annual Report to the Minister of Health.

- Specialist Practitioner's Qualifications Committee of the Medical Board

This Committee is serviced by the same staff as the Medical Board. Its functions are restricted to the registration of specialist practitioners and the maintenance of the register.

- Dental Board of Victoria

This is a self-funding Board with a broad range of functions similar to the Medical Board.

These relate to the registration of dentists and dental auxiliaries and the maintenance of the registers for same; the practice of dentistry and dental surgery and the conduct of such practice; determining appropriate courses of study, training and examinations, for registration. The Board has the power to investigate complaints and impose penalties.

- Specialist Practitioners Qualifications Committee of the Dental Board

This Committee is a statutory body in its own right functioning under the auspices of the Dental Board. Its functions are restricted in the same manner as the Specialist (Practitioners Qualifications) Committee of the Medical Board to the registration of specialists.

- Advanced Dental Technicians Qualifications Board

This Board is provided with public service support staff. The Board's operating expenses are paid by revenue generated from registration fees. The Board has responsibility for the conduct and practice of dental mechanics by advanced dental technicians.

- Dental Technicians Licensing Committee

This Board is provided with public service support staff. The Board's operating expenses are paid by revenue generated from registration fees. The Board is responsible for supervising the conduct of technicians and the practice of dental mechanics by dental technicians.

- Chiropractors and Osteopaths Registration Board

This Board is provided with public service support staff. The Board's operating expenses are paid by revenue generated from registration fees. The Board's functions relate to approving appropriate courses of

study and examinations in chiropractic and osteopathy, the approval of qualifications and the maintenance of a register of chiropractors and osteopaths.

The Board does not have the power to determine complaints against individual practitioners. The Minister of Consumer Affairs wrote to the Health Minister earlier this year, expressing concern that this Board did not have the power to enforce matters relating to professional standards.

- Chiropodists Registration Board

This Board is staffed by public service support staff, and its operating expenses are covered by revenue generated from registration fees.

The Board is responsible for determining appropriate training courses, conducting examinations and maintaining a register.

- Dietitians Registration Board

This Board is staffed by public service support staff, and operating expenses are met by fee revenue.

The Board is responsible for prescribing training courses, approving examinations and maintaining a register.

- Optometrists Registration Board

This Board is self-funding from registration fees, including the provision of support staff. The Board is responsible for prescribing training courses and examinations and maintaining a register.

- Pharmacy Board

This Board is self-supporting from registration fees and provides its own support staff. The Board is responsible for the general control of the practice of pharmacy as well as the maintenance of a register.

- Physiotherapists Registration Board

This Board is self supporting from fee revenue, including the provision of support staff. The Board is responsible for conducting examinations, training courses and the maintenance of a register.

- Victorian Nursing Council

The Victorian Nursing Council is a self-funding body with its own support staff. The Board is responsible for the registration of nurses and the issue of an annual practising certificate.

- Victorian Psychological Council

This Board is provided with public service support staff. Operating expenses are met from revenue generated by fees.

The Board is responsible for maintaining a register of psychologists, prescribing examinations and appropriate training courses."<sup>36</sup>

### 7.7.1 Variability of Boards

The Committee is of the opinion that the variability and diversity of the role and function of these Boards precludes them from being an efficient and coherent segment of the existing complaints system. It appears that most Boards or registry authorities were not originally constituted as complaints handling authorities but rather as registration authorities, thus in an ad hoc manner some have come to mix administrative with quasi-judicial functions.

### 7.7.2 Overload of Complaints

It has become apparent from the Annual Reports of the Medical Board of Victoria that there has been a dramatic rise in the total number of complaints received, rising from 140 to 299 in the last year:

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<sup>36.</sup> Letter from the Health Commission dated 5/8/83.

Total number								
of complaints	1976/77	'77/78	'78/79	'79/80	'80/81	'81/82	'82/83	
received:	40	46	70	96	114	140	299	

The increasing pressures that have been impeding the work of the Board are amply detailed in their First and Second Annual Reports. It is clear that the problems confronting the Board severely inhibit both the time that they have available for their investigative and complaints handling function, and also reduce their efficiency in the time taken to respond to a complaint. The Board does not appear to have the resources to investigate properly all complaints, for example, in the interviewing of witnesses. In addition the pressure from private practices and the lack of resources inhibits its proper function.

This point applies to other Boards charged with being effective complaints handling authorities: they must have adequate powers and resources.

### 7.7.3 Investigative powers

Most Boards cannot initiate an inquiry but can only respond to a complaint. Since 1981, the Medical Board has been able to initiate its own inquiries, though without manpower, powers and resources both the cases initiated and the extent of the inquiries are clearly limited. In situations where Boards can only react to complaints the profession may be well aware of problems yet have to wait for a public written complaint before action can be taken.

## 7.8 PROFESSIONAL ASSOCIATIONS

In many ways the Committee considers that the role of the various professional associations and the reliance on the professional associations are the weakest link in the current complaints system for the following reasons:

- membership of the associations is voluntary and therefore many practitioners may not be members of their respective associations
- there is no uniformity of practice between associations in the mechanisms and procedures of investigating complaints
- associations have no formal powers to order restitution but can advise, recommend, or expel a member
- associations are in a potential conflict of interest situation, and whatever ideals are espoused there is still the probability that the prime interest of an association is the protection of its members
- there is little, if any, public participation or observation of association complaints mechanisms

#### 7.8.1 Associations as "Unions"

The Committee was given ample evidence of the public perception of professional associations, particularly the A M A, as "unions". Submissions from individuals containing comments such as the following, were not uncommon:

"I rang Consumer Affairs a long time ago and they told me to put my complaint in writing and they would refer it to the A M A. As I see this body as the Doctors Union I didn't bother to waste the time writing to them."

A further example concerned alleged dental over-servicing:

"I took my case to the 'Consumer Affairs Counsellor' visiting Wangaratta, wrote out a submission, but was informed that professional people are allowed to use their own societies, that Consumer Affairs people do not arbitrate in their case as they would if the case concerned a carpenter or car salesman."

The above cases illustrate an important issue in the opinion of the Committee. It is clearly inappropriate for public servants and officials of Government departments to refer members of the public to such professional associations to deal with complaints.

## 7.9 VOLUNTARY ASSOCIATIONS

Most voluntary groups (see paragraph 6.7) lack official standing in the investigation of complaints, and have no statutory powers to enforce recommendations.

### 7.9.1 Inhibition of complaints

On several occasions the Committee became aware of both overt and covert forces inhibiting the lodging and prosecution of complaints by members of various voluntary interest groups or associations. Frequently members of such groups are employees of organisations or institutions responsible for the services complained against - or aspects of that service. However, such individuals consider it their professional responsibility to act as advocate for those unable to protect themselves or complain.

In one instance the overt response of a submission presented to the Committee and subsequently reported in the press, was the receipt by a member of that voluntary association of several abusive phone calls. By their nature covert responses to the complaints raised by voluntary associations are much harder to quantify, but include restriction of resources, fear of reduced career prospects, fear of lack of future co-operation by "official" organisations, and a general reluctance to harm the reputation of their employer bodies by publication of sensational articles in the popular press.

It appears that the perception of these pressures may be sufficient to inhibit complaints since, as one group submitted:

"the doctors' word is law and if (midwives) challenge it they would lose their jobs and would probably not be employed anywhere else in the medical field."

## 7.10 THE LEGAL SYSTEM

The Committee considers facile, arguments such as that put forward by the Chairman of the Health Commission, that aggrieved complainants have recourse to the legal system. While agreeing that all citizens should have access to the courts with regard to health complaints this is frequently entirely inappropriate for several reasons:

- the costs or fear of the cost, is commonly beyond the resources of the complainants. For example legal costs between \$1500 to \$2000 a day at trial are not unusual.
- the adversarial system is often inappropriate to the nature of the complaint.
- a common perception is that health professionals band together and thus a court action is unlikely to receive the support of other health professional staff.
- the current system is slow and over-loaded. For example while there may be an acceptable delay of up to four months or so in the Magistrate's Courts, it is not unusual for a Supreme Court case to take up to four years in total with a personal injuries case taking up to 24 months from the issue of a Certificate of Readiness. In the case of the County Courts a common delay is up to 12 months from the issue of a Certificate of Readiness.
- because this formalised system of complaints takes time, money and conviction, it is rarely used by those consumers who need it most, that is, the frail, aged, sick, intellectually handicapped, consumers in lower socio-economic groups, and non-English speakers.

### 7.10.1 Increasing litigation

The Committee considers that the increased use of the legal system as a health complaints mechanism is very much a second best solution, and of questionable benefit to the consumer. Instead the Committee advocates the reform of the existing system, and the setting up of a meaningful complaints mechanism rather than widespread litigation between consumers and health care providers. The Committee notes the evidence of the Australian Federation of Consumer Organisations on what it calls "the American malaise":

"AFCO believes that there are important ways in which patient care and medical costs have suffered in the United States because of the litigious nature of doctor-patient relationships in that country. Costs are pushed up because doctors are forced to engage in "defensive medicine" as opposed to doing what is best for the patient. In other words, when deciding whether a certain test ought to be done, the primary consideration in the doctor's mind becomes how it will look in court if the test is not done. A proliferation of unnecessary tests can cause the patient a lot of extra pain and cost.

Certainly, this litigation produces a desirable caution in American doctors about the consequences of everything they do. However, it can also cause them to shun certain risky but possibly therapeutic procedures or, worse still, turn away from certain high risk patients because they present too great a liability of exposure. It can also mean hesitancy to adopt new medical procedures or to delegate certain functions to nurses and other less highly trained professionals.

In 1969, a malpractice suit was pending against one in every 23 doctors in New York State. By 1974, this had increased to one in 10 (E. Bardach & R. Kagan, Going By the Book, 1982, p.284). The consumer movement hopes it will not be forced, through want of an alternative, to push developments in Australia in this same direction. Surely we can learn from the mistakes of the United States. In the decade to the mid-70's, the average value of awards in medical

malpractice cases in New York quadrupled and it became common for doctors to pay a five figure sum annually in malpractice insurance premiums. According to Jury Verdict Research, in 1979 the average medical malpractice verdict in the U.S. was \$367,000. One recent malpractice award to the parents of a two-year old Texas girl who suffered brain damage during a Caesarean birth was \$137 million (Canberra Times, 20 April 1983)". 37

#### 7.11. PUBLIC FIGURES

The Committee understands that members of the public will direct their complaints to a variety of public figures, particularly in the absence of any clearly publicised or articulated complaints system. Public figures should expect, and in the case of Parliamentarians have an obligation to receive and act upon complaints received. However, such figures are frequently in no better position than ordinary members of the public, without resources, and having no clear structure through which to channel complaints.

As a segment of the current complaints system it is quite unsatisfactory for public figures to continue to act in isolation. It offends an orderly approach to the problem to have to deal with complaints from the top.

#### 8.0 URGENT PRELIMINARY CHANGES NECESSARY TO EXISTING MECHANISMS

- 8.1 There is a need for uniform procedures to provide accurate, comprehensive and systematic data collection, collation and dissemination.
- 8.2 There is a need for greater publicity at the service delivery level of
- mechanisms and procedures for lodging and pursuing complaints,
  - usual charges for standard procedures.
- 8.3 There is a need for clarification and simplification of forms of communication, particularly of a documentary nature.

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37. Submission by the Australian Federation of Consumer Organisations Inc., pp 7-8.

8.4 There is a need for the role, functions, structure, powers and resources of the various registration boards to be reviewed and assessed.

8.5 There is a need for increased public participation in the existing complaints mechanisms.

## 9.0 SUMMARY AND COMMENT

Submissions provide ample evidence that there are sufficient numbers of complaints and disquiet about their handling to justify the establishment of a Health Complaints Authority. This Interim Report indicates through its recommendations in Sections 8 and 11 the first step only in this process. The proposed Authority to be presented in the Final Report will act in conjunction with the present licensing and registering authorities to investigate complaints to the resolution or recommendation stage.

The Committee considers that the existing system needs reform and that, given those reforms, the proposed Authority can be successfully introduced. In addition to foreshadowing a proposal to create a Health Complaints Authority this Interim Report also indicates:

- that the existing system of dealing with health complaints is totally inadequate and is in need of short term improvements
- that these changes should be built upon in the creation of the new Authority
- that the Committee accepts the principle of peer review to the extent that those expert in the area should have an involvement in investigations of complaints
- that the Committee considers that the existing system of self-regulation should be monitored by lay or consumer participants.

## 10.0 MATTERS OUTSIDE THE TERMS OF REFERENCE

### 10.1 TRAINING AND EDUCATION

The Committee believes that increased emphasis should be given in the education and training of health service providers, and in particular medical practitioners, to:

- . the importance of promoting sensitivity to cultural differences and recognising and overcoming the problems associated with socio-cultural differences within the community
- . the importance of creating and maintaining good interpersonal relationships with patients/clients
- . the importance of clear and adequate communication with patients/clients
- . the importance of establishing appropriate procedures to minimise delays.

10.2 The Committee recommends the introduction of the appropriate audio-visual equipment in the languages of the major non-English speaking groups, in an attempt to overcome the "misunderstandings" cited as a common cause of complaint. Such material should be freely available at the major locations of health service delivery.

10.3 Consideration should be given by community groups to the need to encourage a "patient advocates" scheme to take responsibility for the needs of those in long-term care.

10.4 The Committee is concerned at the lack of protection of those involved in complaints against health services. Complaints to the body complained of, clearly leave the complainant open to retribution.

The current system lacks an independent body in the middle range between the health service providers and the various statutory mechanisms of complaint and appeal, such as the Ombudsman, appropriate registration boards or the courts. It is envisaged, however, that the proposed Health Complaints Authority will provide such an independent middle range body, to which those who fear retribution may appeal.

## 11.0 RECOMMENDATIONS:

The Committee recommends as follows:

1. A Committee drawn from Chief Executive Officers in the health field must be established to draft a uniform Health Complaints Report Form and common procedures for use in health care facilities and services, including a 28-day time limit for responding to a complainant. (See paras 7.3.2, 7.6.1). An example of such forms and procedures is presented in Appendix 3.
2. All health care organisations and institutions, for example hospitals (both public and private), nursing homes, special accommodation houses, etc., must establish internal complaints procedures. (7.1.3, 7.3.2, 7.6.1)
3. A specific officer within all health care institutions and organisations must be responsible for administering an internal complaints procedure. (7.1.3, 7.6.1)
4. Both oral and written complaints must be recorded on the Health Complaints Report Form (as developed by Recommendation 1 above) by a specific officer responsible for administering this procedure. (7.1.2)
5. Until the proposed Health Complaints Authority is established all health care organisations and institutions (as in 2 & 3 above) must supply an annual report to the Health Commission from their records regarding the number, sources and nature of complaints received and action taken. (See as an example, Appendix 2.) (7.1.1)

6. Until the establishment of the proposed Health Complaints Authority the Health Commission must maintain a central register of complaints, their sources, nature, and action taken. (7.1.1, 7.1.4)
7. All health care organisations and institutions must make available to complainants information concerning the various options open to them in pursuing their grievance. (7.3.1.)
8. The Health Commission must publish and distribute a pamphlet describing the current complaints mechanisms.
9. Information concerning current mechanisms and procedures for lodging and pursuing complaints must be made available in languages of the major non-English speaking groups. (7.2.2)
10. If an individual is unable for various reasons to lodge a complaint on his or her own behalf, then another person may lodge a complaint on behalf of that individual and must be advised of complaints procedures. (7.3.3, 7.6.1.)
11. Those providing health care services must undertake a major review of all public forms and documents involving patients with a view to rationalisation and simplification and the removal of sources of misunderstanding and confusion. (5.1.2, 5.1.3, 5.1.4, 7.2, 7.2.1)
12. Provision must be made for translation or interpretation of forms and documents for those of non-English speaking backgrounds. (7.2.2)
13. Health Funds must simplify and clarify information regarding the level of cover provided by them to their members. (5.6.2, 5.6.3)
14. The Ministry of Consumer Affairs must define its jurisdiction in the investigation and prosecution of health complaints matters, and set it out in full clear guidelines. (7.5). These guidelines must be available in the languages of the major non-English speaking groups. (7.2.2)

15. Where any matter coming before the Ministry of Consumer Affairs is considered to be outside the jurisdiction of the Ministry, the Ministry must refer the complaint in the first instance directly to the relevant statutory authority or appropriate registration board.
16. The Health Commission must clarify its role in the licencing, supervision, inspection and investigation of Special Accommodation Houses, provide information to proprietors and residents on that role, and ensure that sufficient resources are made available by the Health Commission to carry out that responsibility. (7.3.7)
17. Community representatives (that is individuals who are not and have never been registered as practitioners by the particular statutory board) must be appointed to the Boards. Such Community representatives must sit on any complaints sub-committee or council that may be established by a board. (5.2.2, 7.7)
18. Boards must provide the staff and resources to investigate all complaints properly and report their findings to complainants within 3 months of the lodging of the complaint. (7.7.2)
19. The differing powers provided to the various boards must be reviewed by the Health Commission with a view to ensuring a greater consistency in their areas of responsibility and authority. (5.2.2, 7.7.1)
20. All Boards must have the powers to initiate investigations rather than only responding to specific complaints. (7.7.3)
21. All licensing boards and registration bodies for health care professionals (see para 6.5) must be directly responsible to the Minister of Health.
22. Boards which have the powers to hear complaints must specify and make freely available their procedures to complainants.

23. All health service practitioners must be required to display in public reception areas the fees usually charged for standard or common procedures. (5.5.1)
24. Health Insurance Organisations must provide their contributors with written information on request concerning their refunds on health services. (5.5)

Committee Room

12 October 1983

Appendix 1.

RECEIPT OF SUBMISSIONS

1. Government Departments, Authorities, Agencies

Capital Territory Health Commission  
Chiropractors and Osteopaths Registration Board \*  
City of Colac  
City of Collingwood  
City of Croydon  
City of Springvale  
City of Waverley  
City of Warrnambool  
Department of Health - Queensland  
Director - General of Health Services Tasmania  
Health Commission of New South Wales  
Health Commission of Victoria \*  
Minister for Health - Western Australia  
Ministry of Consumer Affairs \*  
Office of Minister of Health - Adelaide  
Pharmacy Board of Victoria \*  
Physiotherapists Registration Board of Victoria \*  
The Dental Board of Victoria  
The Dietitians Registration Board of Victoria \*  
The Medical Board of Victoria \*  
The Ombudsman Victoria  
Town of Kyabram  
Victorian Ethnic Affairs Commission \*

2. Hospitals

Alfred Hospital  
Ballarat Base Hospital  
Bethesda Hospital  
Box Hill Hospital \*  
Seymour District Memorial Hospital  
The Geelong Hospital  
The Royal Melbourne Hospital  
The Royal Women's Hospital  
Western General Hospital

3. Other Institutions, Associations and Organisations

Amalgamated Metals Foundry & Shipwrights Union  
Australasian Meat Industry Employees Union  
Australian Association of Social Workers - Victorian Branch \*  
Australian Association of Surgeons - Victorian State Committee  
Australian Council on the Ageing  
Australian Dental Association - Victorian Branch \*

Australian Federation of Consumer Organisations Inc. \*  
 Australian Medical Association (Victorian Branch) \*  
 Association of Medical Superintendents of Victorian Hospitals  
 Australian Optometrical Association - Victorian Division  
 Australian Physiotherapy Association - Victorian Branch \*  
 Australian Podiatry Association (Vic).  
 Community Hospitals Association \*  
 Diamond Valley Childbirth Education Association  
 Doctors Reform Society (Victoria)  
 Health Benefits Council of Victoria \*  
 Multiple Sclerosis Society of Victoria  
 New DEAL for the Handicapped (Dignity, Education and Language) \*  
 Nursing Administrators of Geelong  
 Pharmaceutical Society of Australia (Victorian Branch) Ltd  
 Private Hospitals' Association of Victoria \*  
 Regional Accommodation Team Services \*  
 Royal Australian Nursing Federation (Victorian Branch)  
 Royal District Nursing Service \*  
 Royal Victorian Institute for the Blind  
 The Australian Chiropractors' Association - Victorian Branch \*  
 The Australian Council of Hospital Standards  
 The Australian Kidney Foundation  
 The Australian Psychological Society - Victorian Branch  
 The Rest Homes and Special Accommodation Houses Association  
 The Royal Australian College of General Practitioners  
 The Salvation Army  
 The Victorian Hospitals' Association Limited \*  
 Trade Union Migrant Workers Centre \*  
 Yooralla Society of Victoria

4. Individuals

Dr. M. Barr Fitzroy  
 Mrs C. Chester Langwarrin  
 Mr. R.M. Ellis Ashburton  
 Ms S. Harvey Mt Martha  
 Mr. I.G. Hughes Melbourne  
 Mr. D.F.M. Jarm Elsternwick \*  
 Mrs E. King Wangandary  
 Mr. H. Leopold Upper Ferntree Gully  
 Mr. I. Libek Caulfield South  
 Mr. B. Markovich Fitzroy  
 Mr. & Mrs J. Martin West Preston  
 Mr. E. Micallef, M.L.A. \*  
 Mrs. B. Milton Ringwood  
 Dr. P.J. McCleave Ascot Vale  
 Mr. K.E. McIntosh Healesville  
 Mr E. Nimerovsky St Kilda  
 Mrs. K. Noble Kew  
 Mrs. K. Sherriff Koroit  
 Mr. P. Smith Parkdale  
 Mrs. G.E. Strachan Chelsea  
 Mr. I. Tulloch Kew  
 Ms A. Walpole Whorouly South  
 Mr. V. Zhugailo Balaclava

5.

Overseas

Canada

City of Toronto - Department of Public Health  
 Department of Health Fredericton - New Brunswick  
 Ministry of Health - Ontario  
 Department of Health - Manitoba  
 Department of Health - Province of Newfoundland  
 Department of Social Services and Community Health - Alberta  
 Department of Social Affairs - Government of Quebec  
 Saskatchewan Health - Regina  
 °

United Kingdom

Health Service Commissioner for England, Scotland and Wales (interviewed  
 by the Director of Research)  
 Department of Health and Social Security  
 East Anglian Regional Health Authority  
 North East Thames Regional Health Authority  
 Northern Regional Health Authority  
 South East Thames Regional Health Authority  
 South Western Regional Health Authority  
 Trent Regional Health Authority  
 United Kingdom Health Ombudsman  
 Wessex Regional Health Authority

United States of America

Arkansas Department of Health  
 Attorney General of Missouri  
 Board of Health - State of Indiana  
 Department of Attorney-General - State of Michigan  
 Department of Consumer Affairs - State of California  
 Department of Health and Environmental Sciences - State of Montana  
 Department of Health and Mental Hygiene - State of Maryland  
 Department of Health and Rehabilitative Services - State of Florida  
 Department of Health and Social Services - State of Wisconsin  
 Department of Health - Commonwealth of Massachusetts  
 Department of Health - Commonwealth of Pennsylvania  
 Department of Health - North Dakota  
 Department of Health - State of Alabama  
 Department of Health - State of Alaska  
 Department of Health - State of Connecticut  
 Department of Health - State of Delaware  
 Department of Health - State of Hawaii  
 Department of Health - Iowa  
 Department of Health - State of Montana

Department of Health - State of Nebraska  
Department of Health - State of New Jersey  
Department of Health - State of New York  
Department of Health - State of Ohio  
Department of Health - State of Oklahoma  
Department of Health - State of Texas  
Department of Health - State of Utah  
Department of Health - State of West Virginia  
Department of Health - State of Wisconsin  
Department of Health Regulatory Boards - Commonwealth of Virginia  
Department of Human Resources - Health Division Oregon  
Department of Human Resources - State of Nevada  
Department of Justice - State of North Carolina  
Department of Licensing - State of Washington  
Department of Public Health - State of Illinois  
Department of Social Services - South Dakota  
Office of Health Facility Complaints - Minnesota

Other Countries

Department of Health - New Zealand

Helsedirektoratet - The Health Services of Norway

Swiss Medical Association

The National Board of Health - Finland

The Swedish Planning and Rationalisation Institute of the Health  
and Social Services

<u>No.</u>	<u>Topic</u>	<u>Action</u>
<u>Area: 3 West</u>		
17	Heat	Committee spent \$250,000 to provide air cooling.
<u>Area: Accident &amp; Emergency Department</u>		
5	Accounts	3 accounts cancelled, 2 cases patients not familiar with routine, 1 case patient came for repeat drugs, not given, no treatment. 1 case extreme difficulty suturing child.
2	Delays	1 'flu epidemic, staffing problems. 1 treatment of child - reviewed procedure for paediatric patients.
7	Treatment/Diagnosis	2 considered complaint was justified, matter discussed with doctor. 5 treated appropriately.
1	Approach/Attitude	Apology - patient's complaint of very minor nature at 4 a.m.
1	Availability of Surgeon	Not sustained - misunderstanding.
1	Cleanliness of cubicle	Not sustained.
1	Communication	Poor R.M.O. approach.
<u>Area: Theatre</u>		
1	Cancelled operation	Delayed operation, surgeon required for list at RMH.
<u>Area: Outpatients</u>		
3	Delays	Additional specialist appointed.
	Organisation and officiousness	Large clinic requires extensive organisation.
	Difficulty in obtaining telephone appointment	Changed procedures.
<u>Area: 2 North</u>		
2	Loss of wedding ring	Unable to help.
	Time of discharge	Literal interpretation of Handbook. Surgeon approval needed.
	Staff rudeness	Personality clash.
<u>Area: 3 South</u>		
2	Security of separated patient	Every attempt made to meet wishes.
	Screening/privacy	Remodelling of Ward about to be undertaken.
<u>Area: Miscellaneous</u>		
1	Charges for tests	Misunderstanding, tests ordered by doctor.
1	Doctor - access to patient's notes	Changed policy
1	Pain	Information only.

Appendix 3. AN EXAMPLE OF COMPLAINTS PROCEDURES AND FORM  
(The Royal Melbourne Hospital)

MANAGEMENT OF COMPLAINTS AGAINST THE HOSPITAL PROCEDURE

1. The Operational Auditor is responsible to the Executive Director for developing, promoting and monitoring compliance with the procedures for implementation of the policy on management of complaints against the Hospital.

2. Any staff member who receives an oral complaint from a patient, a relative or other representative shall obtain and record full details of the complaint.

Where the grounds for the complaint are evident and the solution is simple, the staff member should endeavour to resolve the matter with immediate explanation and/or apology to the complainant.

Where the basis for the complaint is complex and involves matters outside the authority or responsibilities of the staff member, then the complainant should be assured that details will be conveyed promptly to the appropriate officer for investigation and resolution.

The staff member will record the circumstances on a Complaint Report form.

3. Written complaints will be directed for resolution to the most appropriate line officer of the Hospital having regard to the basis and nature of the complaint. Provided there is no infringement upon the authority of others, the officer concerned will proceed to investigate and resolve the complaint.

That officer will record the circumstances on a Complaint Report form.

4. Where a complaint involves -

4.1 a threat or implied threat of legal action,

4.2 a threat or implied threat of referring the matter to a statutory authority, e.g. the Ombudsman, the Director of Consumer Affairs or the Commissioner for Equal Opportunity, or

4.3 a reference to facts, the subject of current legal action or known threat of legal action,

the Operational Auditor is to be informed forthwith. No contact is to be made with the complainant without the concurrence of the Operational Audit Manager.

5. In the circumstances described in 4 above, the Operational Auditor will obtain any relevant documents and an account of the facts and convey them orally to the Executive Director.

6. The Executive Director will decide whether he or the Operational Auditor will respond to a complaint from a statutory authority and in cases of express or implied legal action, the Executive Director will decide whether or not details of the complaint will be made known to the Hospital's solicitors or insurers. Communications with those parties will be the responsibility of the Director of Administrative Services.
7. In the normal course all correspondence with a statutory authority will be signed by the Executive Director.
8. The Operational Auditor will study the relevant statutes pertinent to the authorities referred to in 4.2. above, and other relevant literature and will make contact with officers of those authorities in order to understand their requirements and attitudes and the documentation used.
9. All Complaint Report forms are to be directed to the Operational Auditor. He will acknowledge receipt of each and will analyse them for the purpose of deriving trends. Where problem areas are identified he will advise Management at appropriate levels as a basis for remedial action such as counselling a staff member, reviewing a policy or varying a procedure.
10. The Operational Auditor will compile monthly statistical reports on complaints received and distribute copies to the Executive Director and each Director of a Service.
11. The Operational Auditor will assist members of staff in their reporting of complaints and will speak to groups of staff for the purpose of promoting a full understanding of the importance and implications of the policy on this subject. However, he will not normally deal directly with patients or other complainants other than representatives of statutory authorities.
12. The Operational Auditor is not directly concerned with complaints from staff members or prospective employees in connection with their terms and conditions of employment. Should a communication from the Commissioner for Equal Opportunity refer to such a complaint it will be conveyed to the Manager, Personnel Services for attention.

COMPLAINT REPORTING PROCEDURE  
(The Royal Melbourne Hospital)

1. Each oral complaint should be dealt with promptly by the staff member receiving it.
2. Complaints in writing should be directed to the most appropriate line officer of the Hospital for action.
3. All complaints, other than expressions of dissatisfaction of a minor nature which are promptly dealt with and do not relate to Hospital practices, are to be recorded on a Complaint Report.
4. It is important that all complaints be acted upon and reported promptly so that:
  - hazards to patient well-being will be revealed and action taken to avoid further complaint,
  - inadequate or inappropriate practices will be identified and corrected,
  - desired standards of quality control will be maintained, and
  - Hospital involvement in legal action will be minimised.
5. Members of staff must use their judgement on what is reportable but, if in doubt, lodge a Complaint Report.

As a guide, the sort of complaints the Hospital has in mind are those in respect of:-

- 5.1 Inadequate or inappropriate medical treatment or nursing.
- 5.2 Injury to patients and visitors.
- 5.3 Staff training or suitability for duties to which assigned.
- 5.4 Quality and suitability of equipment and Hospital building.
- 5.5 Ancillary services e.g. food services, admitting and assessing, patients accounts, chaplaincy, housekeeping, paramedical facilities, provision of walking and other aids and pharmaceutical and surgical supplies, lifts, mail and telephone facilities.
- 5.6 Administrative practices.

Once only expressions of dissatisfaction need not be reported if they are minor in nature, promptly dealt with and do not relate to practices.

6. Complaint Reports protect patients and Hospital staff and enable the Hospital to provide good quality health care. This cannot be done unless the Hospital has information to act upon.
7. Complaint Reports are to be submitted promptly and directly to the Operational Auditor, 3rd Floor, Jane Bell House, house telephone numbers 7503 or 7379. His responsibilities include:-
  - 7.1 Analysing each Complaint Report.
  - 7.2 Assisting members of staff, where necessary, in their reporting of complaints.
  - 7.3 Reporting on trends derived from Complaints Reports.
  - 7.4 Identifying problem areas and advising Management at appropriate levels where he believes there is a need for remedial action such as counselling a staff member or varying a policy statement or procedure.
8. Where an untoward incident, such as is required to be reported on an Incident Report, is accompanied by a complaint then a Complaint Report should also be lodged.
9. The Operational Auditor will register the receipt of each Complaint Report and send an acknowledgement to the initiator. If you do not receive this response within a reasonable period you should contact the Operational Auditor, house telephone numbers 7503 or 7379.

THE ROYAL MELBOURNE HOSPITAL - COMPLAINT REPORT

Complaints Officer Use

(Tick appropriate boxes)

No. \_\_\_\_\_

1. Routine  Urgent

Time \_\_\_\_\_ Rec'd \_\_\_\_\_ Date \_\_\_\_\_

2. Complaint received by \_\_\_\_\_

3. Location at which received \_\_\_\_\_

Ack. \_\_\_\_\_

4. Date and Time received \_\_\_\_\_ hours \_\_\_\_\_

5. Complaint submitted in person  in writing\*  by telephone

6. Complainant was a patient  relative  staff  other

7. Name of complainant \_\_\_\_\_

8. Complaint category - medical  nursing  administrative

equipment  building  catering  accounting

legal  other

9. Brief description with comment on whether or not you believe legal action of any kind may be contemplated.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. Brief description of action taken. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

11. Complainant did  did not  appear to be satisfied with action taken or explanations given.

12. Complaint has  has not  been reported to the Safety Officer on an Incident Report.

\_\_\_\_\_

\_\_\_\_\_

Signature

Staff Designation

\* If complaint in writing, attach a photocopy.





SOCIAL DEVELOPMENT COMMITTEE

INTERIM REPORT ON  
ROAD SAFETY IN VICTORIA

---

Ordered to be printed

---

D-No. 17/1982-83



EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

---

Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

---

Tuesday, 31 May 1983

24. SOCIAL DEVELOPMENT COMMITTEE - The Honourable Evan Walker moved, by leave, That the Honourable K.I.M. Wright be discharged from attendance upon the Social Development Committee.

Question - put and resolved in the affirmative.

Ordered - That a Message be sent to the Assembly acquainting them of the foregoing resolution and that a vacancy accordingly exists in the membership of that Committee.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

---

Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave and question -  
That, contingent upon the coming into operation of the  
Parliamentary Committees (Joint Investigatory Committees) Act  
1982 -

\* \* \* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh,  
Mr. Shell, Mr. Wallace and Mr. Williams be appointed  
members of the Social Development Committee -  
- (Mr. Fordham) - put and agreed to.
- 

Wednesday, 1 June 1983

23. MESSAGE FROM THE LEGISLATIVE COUNCIL - acquainting the Assembly  
that they have agreed to a resolution discharging the  
Honourable K.I.M. Wright from attendance upon the Social  
Development Committee and notifying that a vacancy accordingly  
exists in the membership of that Committee.

\* \* \* \* \*

25. SOCIAL DEVELOPMENT COMMITTEE - Motion made, by leave and  
question - That, Mr. Steggall be appointed a member of  
the Social Development Committee -  
- (Mr. Fordham) - put and agreed to.

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Appendix I - Report of R.A.C.V. Consulting Services "Road Safety in Victoria: existing countermeasures and their effect".

Appendix II - list of submissions.

## R E P O R T

The SOCIAL DEVELOPMENT COMMITTEE, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:-

### 1. FUNCTIONS OF COMMITTEE

The functions of the Committee<sup>1</sup> are to inquire into, consider and report to the Parliament on:-

- (a) any proposal, matter or thing concerned with the social development of the people of the State;
- (b) how the life of individuals, families and communities in the State may be improved; and
- (c) the role of Government in promoting the welfare of the people of the State.

### 2. TERMS OF REFERENCE

The Social Development Committee received a reference from the Governor in Council dated 6 October 1982 to inquire into, report and make recommendations upon the question of road safety in Victoria, and in particular -

- (a) to specify the accident countermeasures which, in the opinion of the Committee, have been proved to reduce accidents and their consequences;
- (b) to specify the accident countermeasures so proved which are not at present being used in Victoria and which in the opinion of the Committee should be introduced into Victoria;
- (c) to consider whether there are any countermeasures not being used in Victoria which the Committee believes would be likely to achieve a worthwhile reduction in accidents;

---

1. Parliamentary Committees Act 1968, Section 4E.

- (d) to report on the research which the Committee believes should be undertaken by the State -
  - (i) to obtain more knowledge of accidents; and
  - (ii) to assess the value of present or proposed accident countermeasures;
- (e) to report on any other matters which appear relevant to the inquiry, including -
  - (i) Collisions with Utility Poles and Roadside Fixtures;
  - (ii) The Effects of Drugs on Driving;
  - (iii) Head and Facial Injuries in Road Accidents;
  - (iv) Driver Education;
  - (v) Alcohol and Road Safety; and
  - (vi) The 1981 Road Toll.

### 3. BACKGROUND

3.1 Appropriate Government agencies and interested organisations were invited to make a submission and general public comment sought through newspaper advertisements on 26 April 1983.

Under Section 4S of the Parliamentary Committees Act 1968, all submissions and evidence received by the former Road Safety Committee to their uncompleted inquiries have been included. A total of 394 individuals and organisations listed in Appendix II made a submission to the inquiry.

Two reports are to be produced. This interim report details the trend in road trauma and road safety countermeasures introduced in the past twenty years and the final report to be tabled early next year will recommend new countermeasures.

- 3.2 To assist in the Inquiry, the Committee engaged the R.A.C.V. Consulting Services, a professionally independent group with the Royal Automobile Club of Victoria (R.A.C.V.) Limited. The study team comprised:

M.H. Cameron, M.Sc., F.S.S. (Project Director);  
J.H. Sanderson, B.Sc., Dip.T.E., M.I.C.E.;  
J.A. McKenzie, M.Eng.Sc., G.Dip.H. & T.E., M.I.E. Aust.;  
R.J. Christie, B.A., Dip.Ed., Dip.Ed. Psych.

Attached as Appendix I is the consultants' report.

4. Comment on Consultants' Report

- 4.1 The Social Development Committee accepts the findings of the consultants' report that there has been substantial alleviation of the road trauma problem in Victoria during the past twenty years.
- 4.2 This substantial alleviation appears to have been primarily in the area of vehicle occupant safety and while many factors have contributed to this improvement, the countermeasures which appear to be responsible for major reductions in road trauma were -
- seat belt fitting and wearing regulations (see page 30 and 33 of the consultants' report);
  - reduced absolute speed limit (one year only) (page 31);
  - drink-driving countermeasures (random breath testing, increased penalties and publicity) (pages 34, 35, 37).

4.3 Reductions in road trauma have been achieved -

for motorcyclists by:

- compulsory wearing of helmets (page 26);
- restricting learner and first-year probationary riders to motorcycles with engine capacity less than 260 cc (page 36);
- increasing use of headlights during the day and wearing of conspicuous clothing (page 37);

for pedestrians by:

- school crossing supervisor schemes (page 33).

It has not been possible to link these countermeasures directly to variations in casualty trends.

4.4 The effect of a number of important countermeasure initiatives could not be assessed because of the absence of evaluative research or scarcity of meaningful data. These initiatives included traffic safety education in schools, drink-driver rehabilitation programmes, random breath testing in country areas, radar speed detectors, hospital casualty facilities, emergency rescue services and media campaigns.

4.5 The consultants' report has illustrated that there are a number of major problem areas where there have been relatively few countermeasure initiatives, even though a great deal is already known. For example, the issue of accidents among young inexperienced drivers with one or a combination of illegal blood alcohol levels, high powered cars and driving at night has received little attention.

4.6 Further, the report has also indicated that motorcyclists and pedestrians continue to have particularly acute road trauma problems.

4.7 New countermeasures in these and other problem areas will be the subject of the Committee's final report.

Committee Room,  
16 November 1983

# ROAD SAFETY IN VICTORIA:

EXISTING COUNTERMEASURES  
AND THEIR EFFECT

presented by

*RACV Consulting Services*

to the

SOCIAL DEVELOPMENT COMMITTEE  
OF THE PARLIAMENT OF VICTORIA

OCTOBER 1983

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## 1. INTRODUCTION

### 1.1 PREAMBLE

During 1983, the Joint Investigatory Social Development Committee of the Parliament of Victoria conducted an Inquiry into Road Safety in Victoria.

To assist it in the Inquiry, the Social Development Committee engaged RACV Consulting Services to provide technical assessments of existing and proposed road accident countermeasures.

This report details the trends in road trauma for the past twenty years, the countermeasures introduced with reference to their effectiveness, and other factors influencing road trauma during the period.

### 1.2 THE ROAD ACCIDENT PROBLEM

Road accidents in 1982 resulted in 709 fatalities, over 8,000 persons admitted to hospital, over 20,000 reported injuries and over 100,000 property damage accidents. This represents an estimated cost of at least \$500 million to the Victorian community (RoSTA 1983).

A brief resume of the basic facts related to road accidents in Victoria illustrates the major problem areas, and those to which the implemented countermeasures have been mainly addressed:

70% of all reported casualty accidents\* occurred in the Melbourne Statistical Division (MSD).

\*Detailed information on road casualty accidents in Victoria was available only as late as 1981

- . 60% of all reported casualty accidents in the MSD occurred at intersections compared with 37% of such accidents in the rest of the State.
- . 64% of all reported casualty accidents in the MSD were vehicle to vehicle collisions, 15% involved pedestrians and 15% involved striking a fixed object or parked car.
- . 47% of all reported casualty accidents in the rest of the State, excluding the MSD, were vehicle to vehicle collisions, 7% involved pedestrians and 25% involved striking a fixed object or parked car, whilst 12% ran off the road without striking an object.
- . 51% of fatalities occurred in the MSD and 49% in the rest of the State.
- . 51% of fatalities in the MSD were vehicle occupants, 32% were pedestrians, 13% were motorcyclists and 4% were bicyclists.
- . 77% of fatalities in the rest of the State, excluding the MSD, were vehicle occupants, 9% were pedestrians, 10% were motorcyclists and 4% were bicyclists.

Although not specifically related to the 1982 data, studies have shown that:

- . Probationary licensed drivers have a significantly higher casualty accident rate per licensed driver than full licence holders, with the rate of first year drivers being four times higher (Deutsch et al 1981). Probationary drivers are involved in 25% of casualty accidents, yet hold only 11% of licences issued (Healy 1982a).
- . Motorcycle learner permit holders are over-involved in casualty accidents, their rate being twice that for

probationary drivers of both cars and motorcycles, three times that for motorcycle licence holders and 22 times that of car learner permit holders (Swann 1982).

Drink-drivers have twice the risk of accident involvement at a blood alcohol level of 0.05% compared with sober drivers, the risk rising to at least ten times at 0.15% (Borkenstein et al 1964, McLean et al 1980). Forty per cent of drivers killed and 18% of drivers attending hospitals during 1982 had illegal blood alcohol levels (RoSTA undated).

### 1.3 COMPONENTS OF THE ROAD ACCIDENT PROBLEM

Traffic crashes can be considered as consisting of three phases: Pre-crash, crash and post-crash. The pre-crash phase relates to those events leading up to undesired energy release, which in turn leads to human or material damage. The pre-crash phase can be further subdivided into three sub-phases, each of which may be targets for countermeasures:

- . Exposure to the road traffic system,
- . Energy build-up in the form of kinetic energy, and
- . Crash involvement.

The crash phase relates to the dissipation of released energy through human or material damage. Countermeasures in this phase aim to limit the effect of this damage, often by sacrificing material damage to prevent human injury.

The post-crash phase relates to the longer term consequences of the human or material damage, for example death or permanent disability. Countermeasures in the post-crash phase aim to limit these consequences by such actions as emergency treatment at the crash scene and road trauma treatment facilities.

As well as these three phases of road accidents, there are three general components; road users, vehicles, and the road environment.

Road users may be either drivers, passengers, motorcyclists, bicyclists, or pedestrians. Vehicles involved could be cars, motorcycles, bicycles or commercial vehicles. The road environment includes not only the road itself but also the immediate roadside.

These three components are each embedded in the general social environment which may have an influence on the three specific traffic components, especially the road users.

Road accident losses, in a long term total sense, can be due to deficiencies or errors in one or more of the accident components within each crash phase. Based on this framework, the following section examines the causes of road accident losses as a guide to the potential of particular countermeasures in reducing total losses.

#### 1.4 CAUSES OF ROAD ACCIDENT LOSSES

In this section a "cause" is defined as a deficiency but for which an accident would not have occurred or its consequences would not have been as severe. Accidents typically have multiple causes.

The causes of traffic accidents were determined carefully and objectively in Indiana, USA by a study in which 2,258 accidents were investigated by technicians and 420 accidents were investigated in greater detail by a multi-disciplinary team of professionals (Treat 1977). Factors were judged as being definitely or probably causal and the following groups of factors were found:

. Human factors alone	57%
. Vehicle factors alone	2%
. Environmental factors alone	3%
. Human and vehicle factors	6%
. Human and environmental factors	26%
. Vehicle and environmental factors	1%
. All three factors	3%

(These percentages do not add to 100% due to rounding).

In summary, road user factors were identified as the cause of 93% of accidents or their severity. Environmental factors were cited as the cause in 34% of accidents, and vehicle factors in 13%. These percentages add to more than 100% because of multiple causes.

It should be pointed out that the countermeasure for a particular type of cause does not necessarily lie in the same area as the cause. In 1976 it was suggested that about 60% of road injury accidents could be avoided using proven remedies and measures; of this reduction, 15% would come from measures applied to the road, 20% from measures applied to the vehicle and 25% from measures applied to the driver (Sabey 1976).

### 1.5 BENEFITS AND COSTS OF COUNTERMEASURES

To determine the benefits of a countermeasure, it is first necessary to know whether it is effective in reducing road accident losses. Because of the difficulties in changing human behaviour, there is no guarantee that a countermeasure will be effective no matter how well-based in terms of being directed at unsafe behaviour. Similarly, there are difficulties in constructively modifying road or vehicle design, because of our rather primitive knowledge of their role in accident losses.

Evaluating the effectiveness of an implemented countermeasure is usually a difficult task because of;

- (a) other changes to the road traffic system at or about the same time
- (b) the absence of a "comparison group" of road users, vehicles or locations, because most countermeasures are applied to the whole road traffic system, and
- (c) the absence of reliable data on the effects of the countermeasure, especially the intermediate and indirect effects.

The value of an effective countermeasure is related to the cost of the accidents it saved - an intangible quantity. The accident savings value can be approximated by the historical costs of accidents of the same type and severity, or it can reflect the value which society is "willing to pay" to save accidents. It has been estimated that society is willing to pay 2 or 3 times the historical accident costs (in real terms) to prevent future accidents (RACV 1983, Lay 1983).

The costs of a countermeasure can be divided into those falling on the public (Government) sector and those on the private sector. Public sector costs include those associated with implementation and on-going operation of the countermeasure, and perhaps costs of public education about the new programme. Private sector costs may include some or all of the implementation or operational costs (if the Government employs a cost-recovery approach), cost of lost mobility from restrictive measures, and intangible costs such as loss of pleasure in driving and philosophical objections to regulation.

Public sector costs are more tangible and relatively easier to evaluate in monetary terms than the private sector costs of countermeasures. However, except for those recently implemented, even the public sector costs of existing countermeasures are difficult to determine.

The absence of information on the full costs of existing countermeasures has made it difficult to determine whether each is cost-beneficial, ie, whether its benefits exceed its costs, both public and private. For this reason, attention has been confined to whether an existing countermeasure is effective, except where information exists to assess cost-benefits. However, it should also be noted that, given the difficulties in showing that a countermeasure is effective, it is usually safe to conclude that a proven effective countermeasure is cost-beneficial unless the costs are unusually large.

## 2. TRENDS IN ROAD TRAUMA DURING 1960-1983

### 2.1 MEASURES OF ROAD TRAUMA

The traditional criterion for measuring road accident losses in Victoria is the number of fatalities, the so called "road toll". The trend in the road toll from 1960 to 1983 is shown in Figure 1.\* The 1983 figure is an estimate based on the number of fatalities to the end of September 1983.

To some extent the emphasis on fatalities is well placed, as fatal accidents account for some 37% of the total economic loss from road accidents in Australia, even though they represent only about 0.6% of total accidents (Atkins 1981).

However, as a measure of total accident losses, fatality numbers have their problems. It has been shown that in Victoria the year to year change in fatalities can be as large as 16%, or approximately 110 deaths, due to chance alone (RACV 1981).

\*These and other road trauma data were supplied by the Australian Bureau of Statistics (ABS).

Figure 1

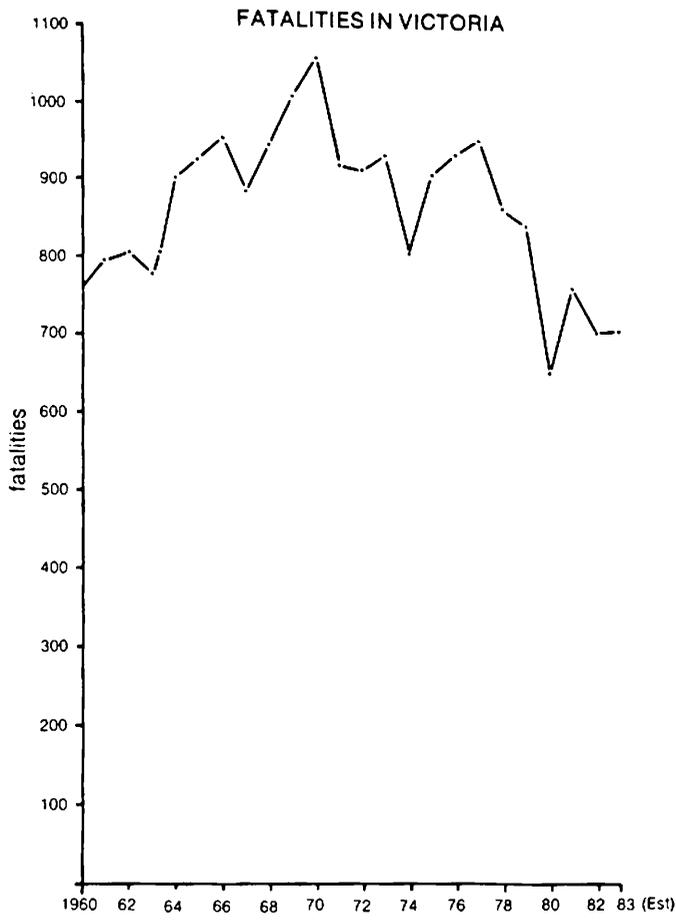


Figure 2

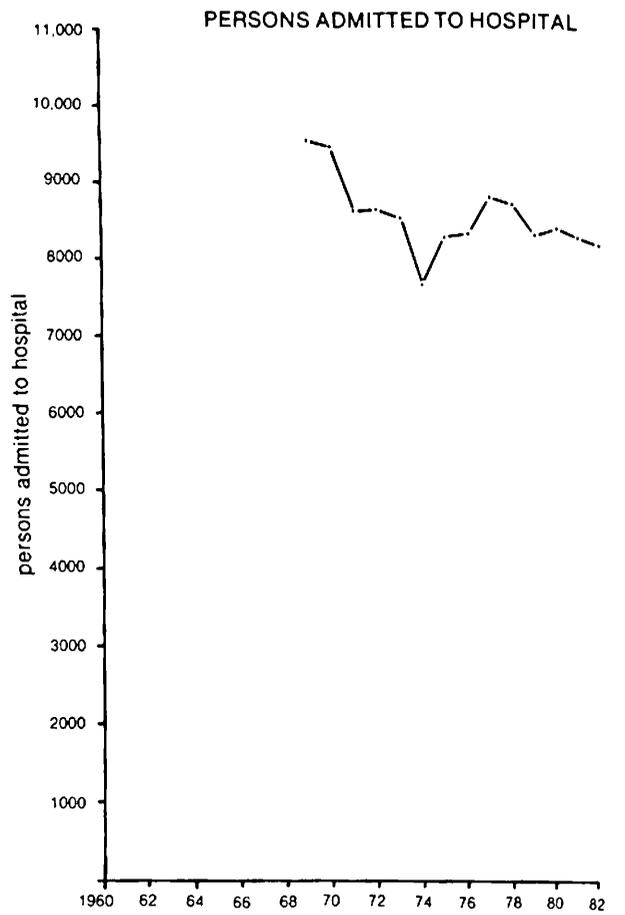
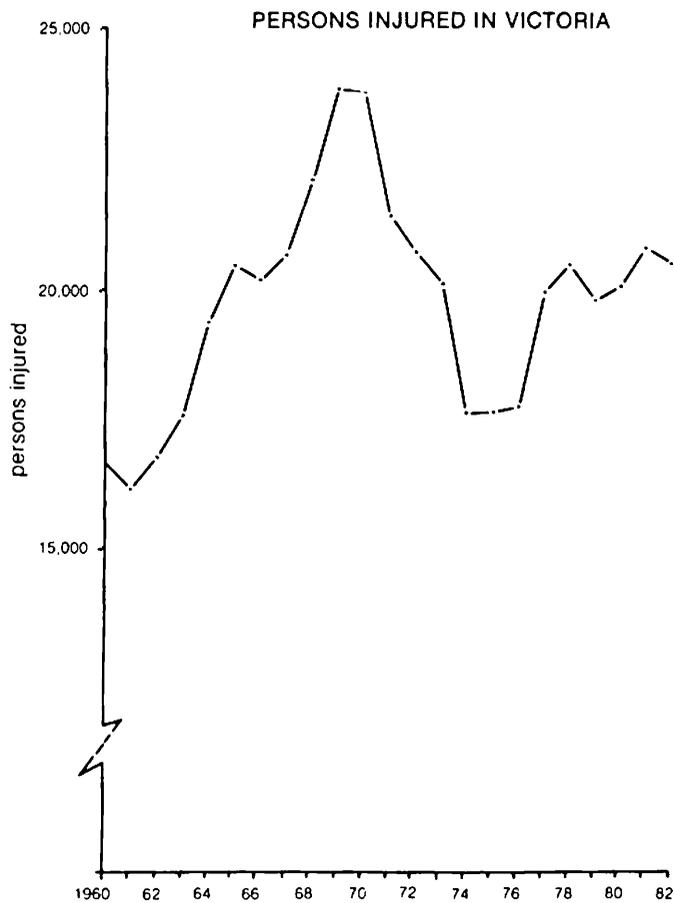


Figure 3



Source: Australian Bureau of Statistics

Note: Data on persons admitted to hospital not available prior to 1969.

A larger population of severe accidents should be used to examine trends in the safety performance of the Victorian road transport system.

Injury accidents involving medical treatment are also required to be reported to the Victoria Police, so one alternative criterion could be total persons injured (Figure 3). However, in January 1977 the Police introduced a new casualty report form which was easier to complete and which led to an increased rate of reporting of casualty accidents from that date (Prasmutas 1980). Thus, there has been a discontinuity in the reporting of persons injured over the period considered.

Another alternative criterion could be the number of hospital admissions resulting from road accidents. Hospital admissions appeared to suffer little or no discontinuity in their trend due to the change in the Police reporting form in 1977 (Figure 2). Furthermore, accidents resulting in hospital admission have been shown to be at least 8 times more costly than injury accidents not resulting in hospital admission (Atkins 1981). Finally, it has been shown that the trend in hospital admissions is not subject to the same degree of chance fluctuation as the fatality trend. The year to year change in hospital admissions could be expected to be no more than 4.5% due to chance (RACV 1981).

For a fuller appreciation of the trends in road accident losses, both the number of fatalities and the number of persons admitted to hospital should be considered. Henceforth, these two measures of road trauma will be considered, where possible, in parallel. Unfortunately this will not be possible prior to 1969 as it was only from that date that the Australian Bureau of Statistics published separate figures on persons injured and admitted to hospital.

## 2.2 THE 1981 ROAD TOLL

During the latter part of 1981, it appeared that road fatalities in Victoria during that year would be considerably greater than in 1980. Accordingly, the former Road Safety Committee of the Parliament of Victoria initiated an inquiry into the Victorian road toll during 1981. In the event, there were 766 deaths on Victorian roads during 1981, compared with 657 in 1980, a 17% increase.

It was pointed out in various submissions that in fact the 1980 fatalities were low relative to the trend, though the figure was within chance fluctuation. (The absence of a similar fluctuation in hospital admissions during 1980 suggests that this was indeed the case). Furthermore, it has been suggested that the 1981 road toll was consistent with the long term trend in fatalities since 1972 (ARRB 1983).

Together these findings suggest that the 1981 road toll was not evidence of a deteriorating road safety situation in Victoria during that year, as appeared to be the case at the time. Indeed, the only evidence of anything unusual regarding trends in road trauma during the early 1980's was that the 1980 fatalities were relatively low.

## 2.3 ROAD TRAUMA INDICES

The measures of road trauma shown in Figures 1 and 2 take no account of base changes in the Victorian environment which may have affected road trauma during the period considered, such as trends in population, vehicles, and distance travelled. Without correcting for these basic trends it is difficult to judge the extent of improvement due to countermeasures and other factors.

Since 1960, the population of Victoria has increased 1.4 times. One set of road trauma indices, which take this fact into account, is the fatalities and hospital admissions per 100,000

population (Figures 4 and 5). These indices are considered to be the most appropriate criteria by those who view road accident losses as a public health problem. On this basis, the fatality rate has been reduced by one third and the hospital admission rate has been reduced by one quarter over the last 20 years.

There is evidence that road usage has increased at a faster rate than the population over the same period. Since 1960, the number of registered vehicles has increased 2.6 times and motor fuel consumption has increased 2.8 times. A reliable measure of trends in travel on Victorian roads over the period is not available. Thus, one alternative set of road trauma indices is fatalities and hospital admissions per 10,000 registered vehicles (Figures 6 and 7). On this basis, the road accident problem in Victoria has been more than halved over the last 20 years.

Another alternative set of indices is fatalities and hospital admissions per 100 million litres of motor fuel consumed (Figures 8 and 9). On this basis, the fatality rate has been reduced by two thirds and the hospital admission rate halved over the 20 year period. These indices are the most reliable available indicators of the trends in the risk of road trauma per unit of road travel. They are considered the most appropriate criteria by those who view road accident losses as one of the costs of providing a road transport system.

#### 2.4 ROAD TRAUMA TRENDS BY TYPE OF ROAD USER

Trends in total fatalities can be subdivided into road user types (Figure 10). Vehicle occupants are the largest component and follow closely the overall trend. Over the past 20 years pedestrian deaths have experienced a downward trend, whereas motorcyclist fatalities have increased, especially since 1970. Bicyclist deaths were a relatively small proportion of the total and have remained approximately constant in number over the period.

Figure 4

FATALITIES PER 100,000 HEAD OF POPULATION IN VICTORIA

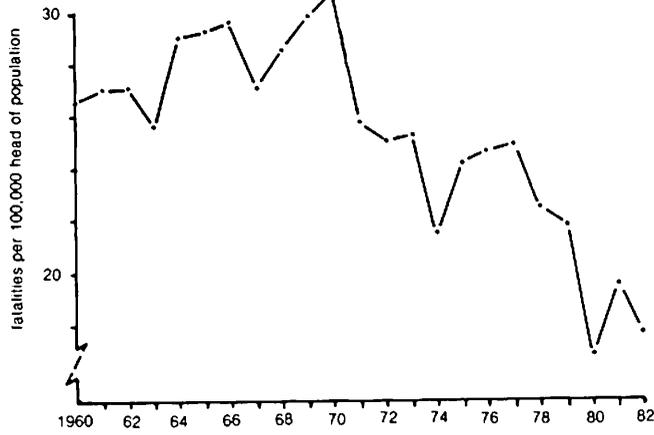


Figure 5

HOSPITAL ADMISSIONS PER 100,000 HEAD OF POPULATION IN VICTORIA

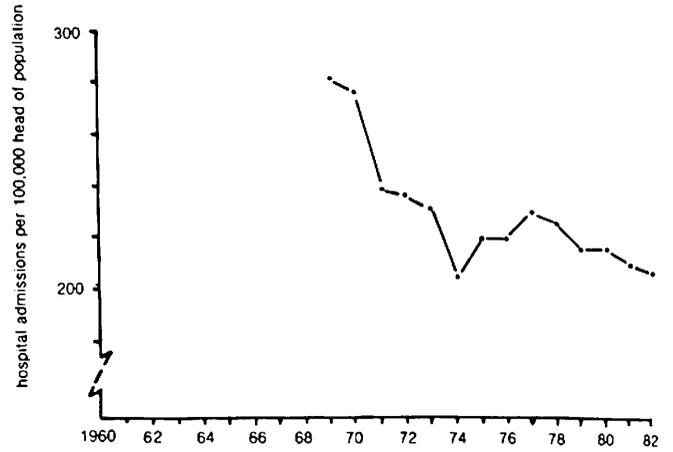


Figure 6

FATALITIES PER 10,000 REGISTERED VEHICLES IN VICTORIA

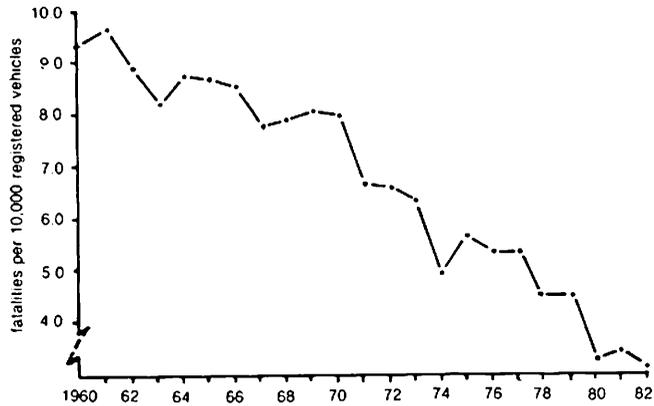


Figure 7

HOSPITAL ADMISSIONS PER 10,000 REGISTERED VEHICLES IN VICTORIA

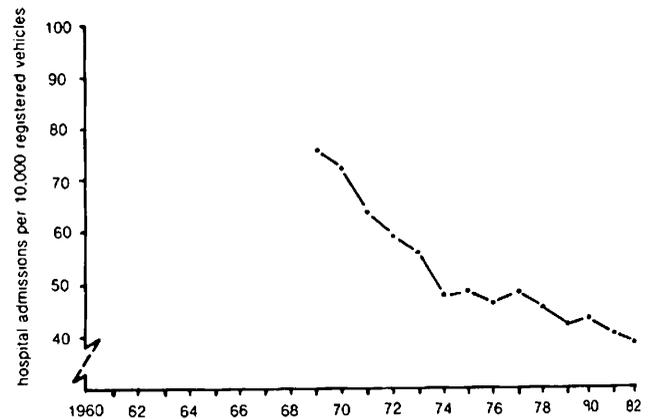


Figure 8

FATALITIES PER HUNDRED MILLION LITRES OF MOTOR SPIRITS IN VICTORIA

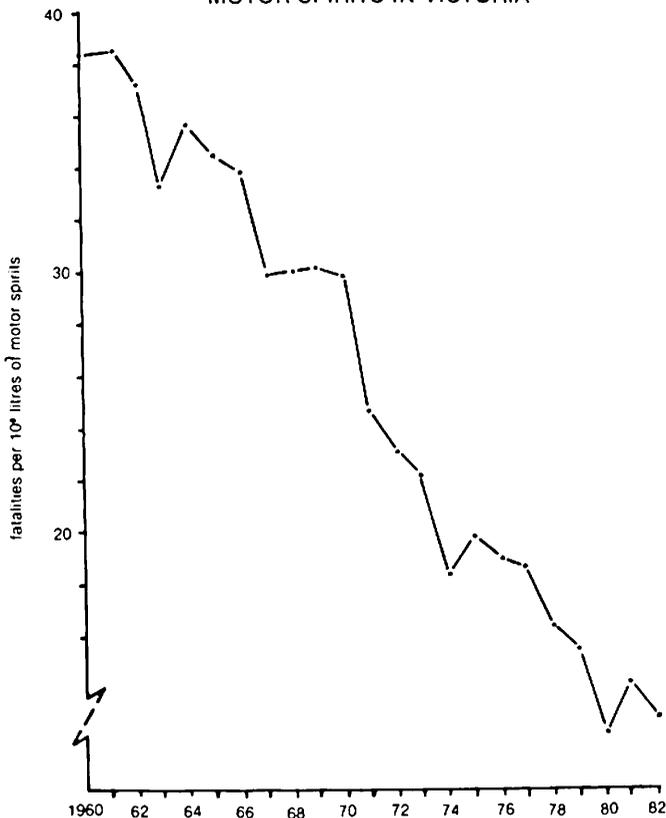


Figure 9

HOSPITAL ADMISSIONS PER HUNDRED MILLION LITRES OF MOTOR SPIRITS

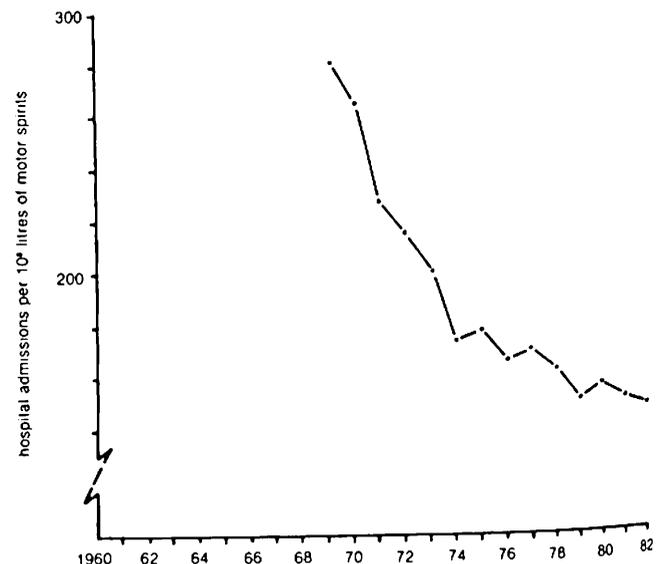
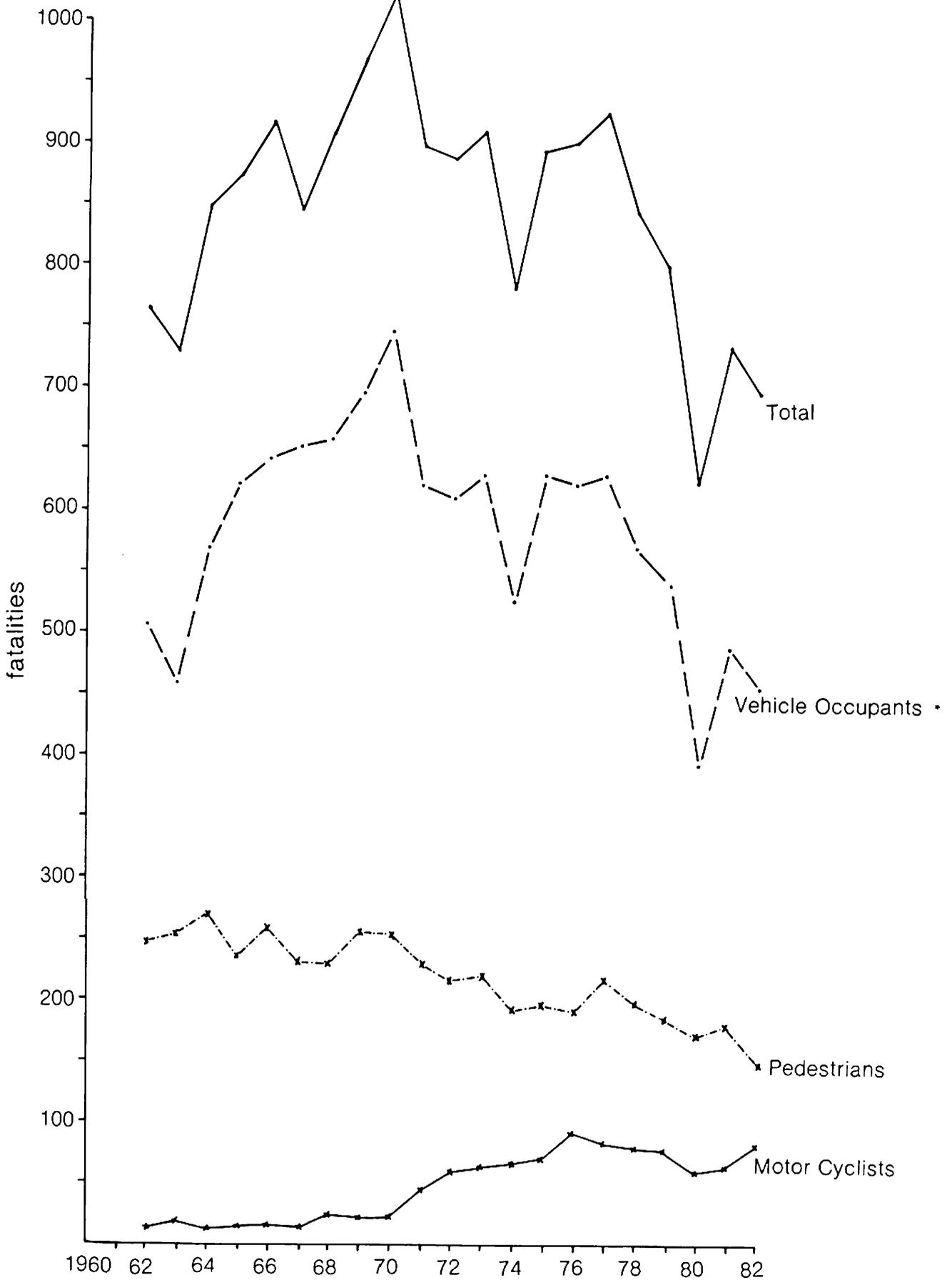


Figure 10  
**FATALITIES BY ROAD USER TYPE IN VICTORIA**



Source: Australian Bureau of Statistics

\*vehicle occupants includes motorcycle pillion passengers

These trends do not allow for the changing numbers of vehicles, pedestrians and motorcycles in Victoria over the last 20 years. Figures 11, 12 and 13 take these factors into account in an appropriate manner by showing trends in vehicle occupant fatalities per 10,000 registered vehicles (excluding motorcycles), motorcyclist fatalities per 10,000 registered motorcycles, and pedestrian fatalities per 100,000 population. Information was not available to examine similar trends in hospital admission rates.

The vehicle occupant fatality rate displays a near consistent decreasing trend, especially since 1970, being more than halved over the 20 year period. Similarly, the pedestrian death rate has been reduced by approximately one half over the same period.

The motorcyclist death rate per 10,000 registered motorcycles increased with considerable chance fluctuation during the 1960's, apparently stabilised during the early 1970's, and since 1976 has displayed a near consistent downward trend. Thus since 1976 motorcyclist deaths seem to have been contained, even though the number of motorcycles has continued to increase since that year.

## 2.5 COMPARISON OF VICTORIA WITH ELSEWHERE

It has been suggested that in most motorised nations during recent decades the road trauma rate per kilometre travelled has declined steadily (ARRB 1983). This improvement has been ascribed to the generally maturing attitude to road transport (Haight 1983). Thus the improvements in the road trauma indices displayed in Figures 4 to 9, in particular the indices based on motor fuel consumption, may not have been due to any unusual measures taken in Victoria, but merely reflect international trends.

Figure 11

VEHICLE OCCUPANT FATALITIES PER 10,000 REGISTERED VEHICLES

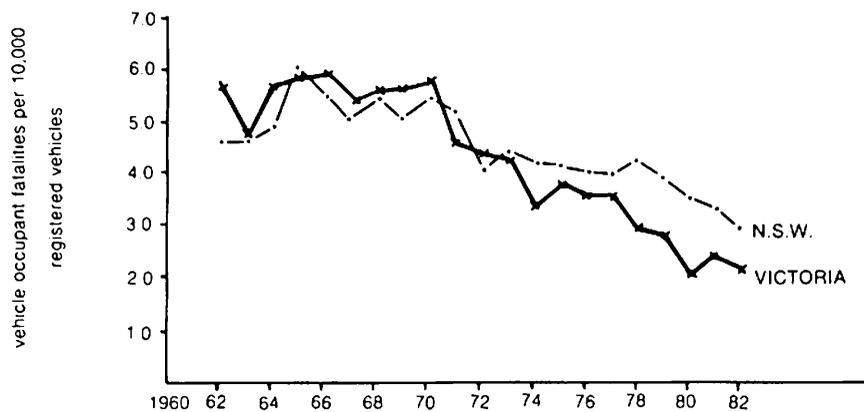


Figure 12

MOTOR CYCLE FATALITIES PER 10,000 REGISTERED MOTOR CYCLES

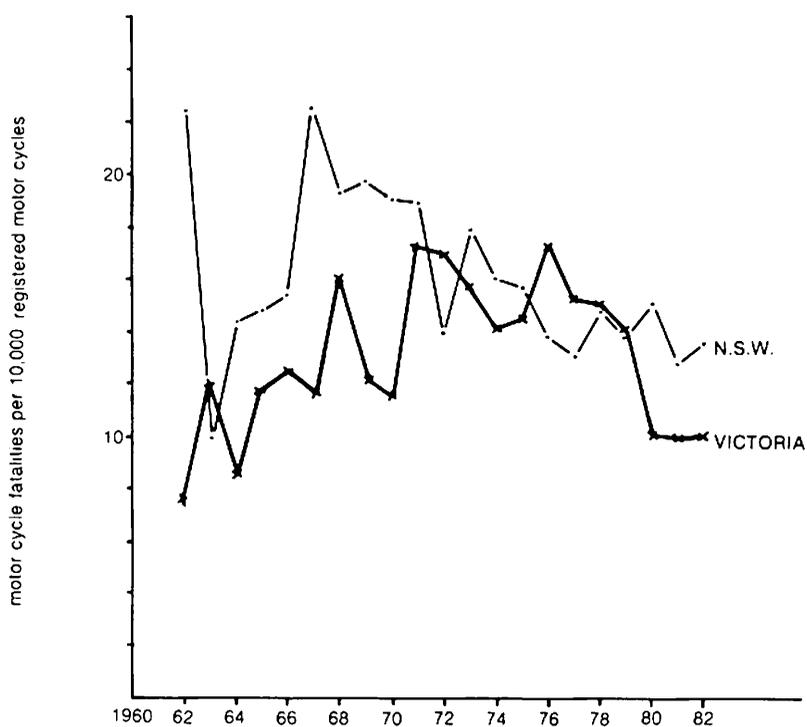


Figure 13

PEDESTRIAN FATALITIES PER 100,000 HEAD OF POPULATION



Source: Australian Bureau of Statistics

To address this question, data on road trauma trends were sought from an area which was comparable to Victoria on socio-economic, demographic and political factors. New South Wales was considered to satisfy these criteria, and appropriate data from this State were readily available to examine road trauma trends by type of road user (Figures 11,12 and 13).

It is apparent that the major difference between the two States relates to the difference in vehicle occupant fatality rates since the early 1970's and perhaps also a difference in motorcyclist fatalities in recent years. No difference in the pedestrian fatality rate trends is readily apparent.

Since 1973 the vehicle occupant fatality rate per 10,000 registered vehicles in Victoria has been consistently less than that in New South Wales, whereas prior to 1973 the trends in the two States followed each other closely. This suggests that the difference between the two States primarily relates to changes in vehicle occupant safety. During 1982, the occupant fatality rate was 2.2 per 10,000 vehicles in Victoria compared with a rate of 2.9 per 10,000 vehicles in New South Wales.

The reasons for the general improvement in the road trauma problem in Victoria during the past 20 years will be examined in the following chapters, with particular reference to countermeasures introduced and their effect on different types of road user.

### 3. COUNTERMEASURES INTRODUCED DURING 1960-1983

#### 3.1 NATURE OF COUNTERMEASURES AND DATES OF INTRODUCTION

A large number of road trauma countermeasures have been introduced in Victoria during the last two decades. These range from countermeasures based on legislation and its enforcement to countermeasures based on education and engineering improvements.

A number of these introduced countermeasures stem directly from the recommendations contained in the 23 reports of the Parliamentary Road Safety Committee which were tabled during the period 1968 to 1981. The titles of these reports and their dates of presentation were:

- . Roadworthiness of Motor Vehicles (October 1968).
- . Points Demerit System (April 1969).
- . Compulsory Fitting and the Compulsory Wearing of Seat Belts (September 1969) .
- . An Aspect of the Alcohol and Drug Factor (the desirability of introducing blood alcohol tests at hospitals for certain driver victims of motor vehicle accidents)(March 1970).
- . An Aspect of the Alcohol and Drug Factor (compulsory breath tests for motor car drivers suspected of having a blood alcohol content in excess of .05 per cent)(September 1970).
- . Alcohol and Road Accidents (November 1970).
- . Permits for Learner Drivers (April 1970).
- . Absolute Speed Limits, Prima Facie Speed Limits and Speed Zones (December 1971).
- . Visual Average Speed Computer and Recorder (April 1972).
- . Age for Driver Licensing (October 1972).
- . Pedestrians and Street Lighting (March 1972).
- . An Aspect of Statistical Data for Road Safety Purposes (November 1973).
- . Some Aspects of Roadworthiness, Speedometers, Alcohol and

Road Accidents and Intersectional Management (December 1974).

- . Alcohol and Road Safety. Research Projects Involving Drinking Drivers (May 1975).
- . Fatalities and Injuries Involving Children Under Eight Who Are Unrestrained in Motor Cars (October 1975).
- . Identification of Motor Vehicle Drivers with Blood Alcohol Levels in Excess of .05 per cent (Alcotest/Alcolmeter)(June 1976).
- . Involvement of Motorcyclists in Road Accidents (December 1976).
- . Education, Training and Assessment of Motorcycle Learner Riders (October 1977).
- . Impounding of Registration Plates, Penalties for Unlicensed Driving and some Aspects of Alcohol and Road Safety (September 1978).
- . Mopeds (November 1979).
- . Safety Aspects of the Hire and Drive Omnibus (December 1980).
- . Restraint of Children Under Eight in the Rear Seats of Motor Cars (April 1981).
- . Alcohol Prohibition for First-Year Drivers (May 1981).

For the purpose of this report, road trauma countermeasures were defined as measures introduced with a primarily road safety objective by the Victorian Government or other official body. In addition, they were required, when fully implemented, to have impact upon all or most of the appropriate road users, vehicles

and roads in Victoria and not to be isolated programmes or pilot studies.

In most cases it has been possible to determine accurately the date of introduction for countermeasures based on legislation. The date of introduction was taken as the date of commencement of the legislation, not the date of assent.

Countermeasures of the non-legislative type were generally implemented progressively over a period and therefore it has not always been possible to define an exact date of introduction. However, the year of first implementation has been obtained in each of these cases.

The nature and appropriate dates of countermeasures introduced in Victoria during the period 1960 to 1983 have been shown on Figure 14, together with the trend in the Victorian road toll over the period.

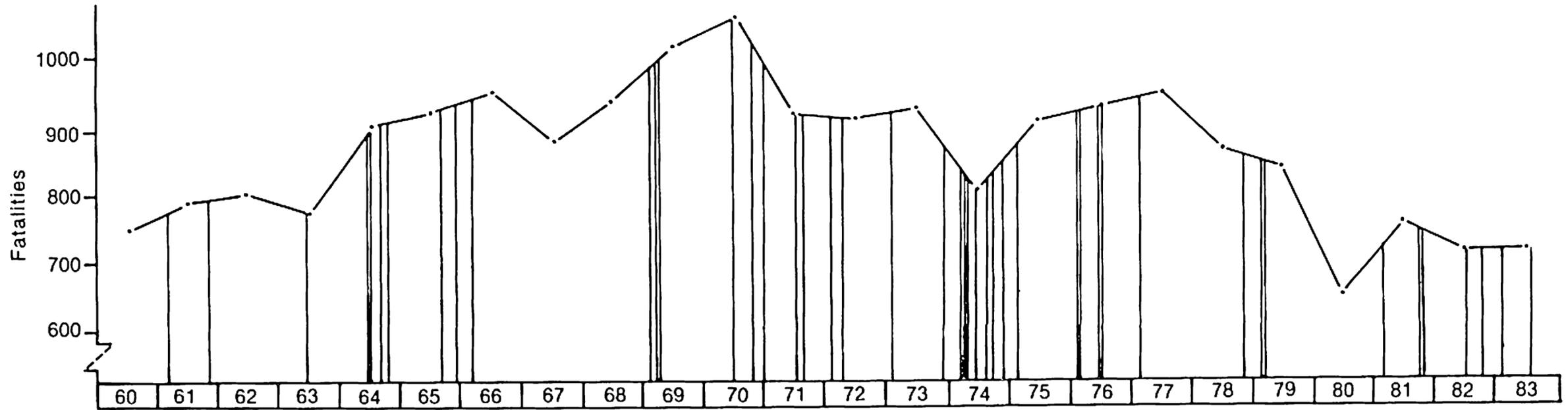
### 3.1.1 Countermeasures Based on Legislation

From 1962 to 1983, the following countermeasures based on legislation and its enforcement were introduced in Victoria.

- . **Compulsory motorcycle rider helmet wearing legislation, January 1961.**
- . **"Breathalyser" legislation, December 1961.** Allowed breath alcohol level measured by a Breathalyser to be used as evidence of blood alcohol concentration.
- . **Minimum penalties for drink-driving offences, 1963.**
- . **Compulsory roadworthiness tests on resale, March 1964.**
- . **Probationary licence system, June 1964.** This included automatic licence cancellation for various offences during the first 3 years of licensing.

Figure 14

# COUNTERMEASURES INTRODUCED DURING 1960-83 RELATED TO FATALITIES IN VICTORIA



<b>PRE-LICENCE EDUCATION</b>	PRE-DRIVER EDUCATION COMMENCED (1967)	BIKE-ED SCIENCE & ROADWORK (1980) ROAD (1981) (1982)															
<b>POST-LICENCE LEGISLATION</b>	PROBATIONARY LICENCE SYSTEM (June 64)	TRAFFIC INFRINGEMENT NOTICES (Aug 65)	P-PLATE FOR FIRST YEAR DRIVERS (Mar 69)	POINTS DEMERIT SYSTEM (May 70)	LICENCE SURCHARGE (Feb 74)	INCREASED PENALTIES (Nov 82)	SURCHARGE INCREASE (Jan 83)										
<b>POST-LICENCE EDUCATION</b>	MOTORCYCLE CONSPICUITY (1977)						DRINK DRIVING (1979)	REAR SEAT BELTS (1981)	SPEED (1982)								
<b>POST-LICENCE RE-EDUCATION</b>	DRINK-DRIVER REHABILITATION COURSES (1974)						DRIVER IMPROVEMENT PROGRAM (1982)										
<b>DRINK-DRIVING</b>	BREATHALYSER LEGISLATION (Dec 61)	MINIMUM PENALTIES INTRODUCED (June 63)	B.A.C. LIMIT OF 0.05% (Feb 66)	INCREASED PENALTIES (June 71)	COMPULSORY B.A.C. TESTING AT HOSPITAL (Apr 74)	RANDOM BREATH TESTING (Jul 76)	INCREASED PENALTIES (Dec 78)										
<b>SPEEDING</b>	AMPHOMETER (Dec 65)		SPEED LIMIT FOR FIRST YEAR DRIVERS (Mar 69)	70 M.P.H. SPEED LIMIT (Jan 72)	60 M.P.H. SPEED LIMIT (Jan 74)	100 km/h SPEED LIMIT (Jul 74)	RADAR (Dec 81)										
<b>SEAT BELTS</b>	COMPULSORY SEAT BELT WEARING (Nov 70)			RETRO. FITTING LEGISLATION (Feb 74)	CHILD RESTRAINT LEGISLATION (Jan 76)	CHILD RESTRAINT LEGISLATION AMENDMENT (Dec 81)											
<b>MOTORCYCLING</b>	COMPULSORY HELMETS (Jan 61)	GRADUATED MOTORCYCLE LICENCE (Jan 79)					LEARNER PERMIT TRAINING/TESTING (Jun 83)										
<b>BICYCLING</b>	BIKE-ED MELBOURNE (1980) BIKE PLAN (1981)																
<b>VEHICLE</b>	COMPULSORY ROADWORTHINESS ON RESALE (Mar 64)	SEAT BELT ANCHORAGE REQUIREMENTS (Oct 64)	ADR 4 (Jan 69)	ADR 2	ADR 10A (Jan 71)	ADR 8 (Jul 71)	ADR 22 (Jan 72)	ADR 10B (Jan 72)	ADR 21 (Jan 73)	ADR 24 (Jan 73)	ADR 4 (Jan 75)	ADR 23A (Jan 75)	ADR 34 (Jul 76)	ADR 29 (Jan 77)	ADR 31 (Jan 77)	ADR 35 (Jan 79)	RANDOM TESTS (Jun 82)
<b>ROAD ENVIRONMENT</b>	GIVE WAY TO RIGHT (Sep 64)		STOP SIGN CLARIFICATION (Dec 73)			METCON STATCON (Oct 74)	SCHOOL CROSSING SUPERVISOR (Dec 74)	ROUNDABOUTS (Jan 76)	'T' JUNCTION PRIORITY RULE (Mar 81)								
<b>SOCIAL ENVIRONMENT</b>	IMPROVED HOSPITAL CASUALTY FACILITIES	MICA AMBULANCES (1973)			SCHOOL CROSSING SUPERVISOR (Dec 74)	AMBULANCE OFFICER TRAINING (1976)	ROAD RESCUE UNITS (1979)										

20

"Give way to the right" intersection priority regulation,  
September 1964.

Seat belt anchorage requirement, October 1964. Anchorages  
required to be fitted to front outer seats of cars  
manufactured after this date.

"On the spot" Traffic Infringement Notices, August 1965.

Amphometer speed detectors, December 1965.

Blood alcohol limit of 0.05%, February 1966. So-called "per  
se" legislation, which defined the drink-driving offence as  
driving with a blood alcohol concentration in excess of  
0.05%, per se, rather than as driving "under the influence"  
or "while intoxicated".

Australian Design Rules (ADRs) for motor vehicle safety,  
commencing January 1969 for vehicles manufactured from that  
date. Safety-related design rules applicable to passenger  
cars and derivative vehicles include:

- Seat belt fitting (ADR4), front seats, January 1969;  
rear seats, January 1971; inertia reel belts in front seats,  
January 1975.
- "Anti-burst" door latches and hinges (ADR2), January 1971.
- "Energy-absorbing" steering columns (ADR10A) January 1971.  
Upgraded to limit rearward displacement in frontal collision  
(ADR10B), January 1973.
- Safety glass (ADR8), July 1971.
- Head restraints (ADR22), January 1972. Upgraded to  
specify minimum height of adjustment (ADR22A), January 1975.
- "Energy-absorbing" instrument panels (ADR21), January 1973.
- Tyre selection standard (ADR24), January 1973.
- Child restraint anchorages (ADR34), July 1976.
- Side door strength (ADR29), January 1977.
- Hydraulic braking systems standards (ADR31), January 1977.  
Applicable to passenger cars.

- Commercial vehicle braking systems (ADR35), January 1979.  
Applicable to passenger car derivatives.
- . "P"-plate and speed limit for first year probationary licence holders, March 1969.
- . Points demerit system, May 1970. Included licence suspension at 12 points and a warning letter sent to motorists who accumulate 6 points.
- . Compulsory seat belt wearing legislation, December 1970. Applicable to vehicle occupants aged 8 years and over who have a seat belt available.
- . Increased drink-driving penalties, August 1971. Licence disqualification for a period dependent on the blood alcohol reading.
- . Absolute speed limit (70 mph), January 1972. Replaced 50 mph prima facie limit.
- . "Stop" sign clarification regulation, December 1973. Amended to mean "stop and give way".
- . Reduced absolute speed limit (60 mph/100 km/h), January 1974. Initially 60 mph, then metricated to 100 km/h in July 1974.
- . Licence surcharge at 9 demerit points, February 1974. Substantial increase in surcharge amount in February, 1983.
- . Seat belt retro-fitting legislation, February 1974. Immediate requirement for vehicles first registered in the period October 1964 to 1968 to be fitted with front seat belts, and for earlier vehicles to be fitted on resale.
- . Compulsory blood alcohol testing of road accident victims attending hospitals, April 1974. This legislation is

supported by Victoria's 0.05% blood alcohol limit law for drivers, operating since 1966. Effective testing levels were reached late in 1974.

Metropolitan and State intersection control programmes (METCON/STATCON), November 1974. Establishment of a priority road network by installation of Stop signs, Give Way signs, and traffic signals (with roundabouts used at a later date), commencing with Melbourne metropolitan intersections.

School crossing supervisor scheme, December 1974.

Child restraint legislation, January 1976. Children under 8 years of age were required to be suitably restrained when occupying a front seat (but not when occupying a rear seat).

Roundabout sign regulation, January 1976.

Random breath testing legislation, July 1976. Under this legislation, the Victoria Police have conducted four concentrated random breath testing campaigns in Melbourne -

- a) February/March and May/June 1977 (32 hours per week for 12 weeks)
- b) October-December 1978 (100 hours per week for 7 weeks)
- c) March/April 1979 (93 hours per week for 4 weeks)
- d) September-December 1979 (74 hours per week during 8 weeks spread over the period).

Increased penalties for drink-driving offences, December 1978. Approximate doubling of penalties, plus a reduction in magistrates' discretion to adjourn cases. The increased penalties were made widely known by an intensive drink-drive publicity campaign during the first quarter of 1979.

Graduated motorcycle licence scheme, January 1979. Learner and first year probationary licensed motorcycle riders were restricted to motorcycles with maximum engine capacity of 260cc.

- . T-junction priority regulation, March 1981.
- . Child restraint legislation amendment, December 1981. An amendment to the 1976 legislation, requiring children under 8 years of age to be restrained in available restraints when occupying rear as well as front seats.
- . Radar speed detectors, December 1981.
- . Random checks, mid-1982. Police roadside tests of vehicle safety-related condition, vehicle registration, driver licensing and drink-driving.
- . Increased penalties for range of offences, November 1982.
- . Motorcycle learner permit training and testing programme, June 1983. Upgraded rider manual and riding knowledge test. Also skill training facilities and testing, initially in the central part of Victoria only.

### 3.1.2 Non-legislative countermeasures

In the education area, there have been substantial initiatives relating to pre-licence and post-licence education, and post-licence re-education.

The major pre-licence education programmes have all been school-based and include:

- . Pre-Driver Education, 1967.
- . Bike Ed bicycle safety programme, 1980.
- . Science and the Road curriculum units, 1981.
- . Roadwork pedestrian safety programme, 1982.

Post-licence education first became a substantial initiative in 1974, with about \$200,000 spent on mass media publicity, rising to about \$800,000 per annum in recent years (MacLean undated). Major publicity campaigns have included:

- . Motorcycle conspicuity campaign, 1977.
- . Drink-driving penalties campaign, 1979.
- . Child restraint campaign, 1979.
- . Rear seat belt campaign, 1981.
- . Radar speeding campaign, 1982.

Post-licence re-education initiatives have been taken to a greater extent in recent years. The programmes are aimed at drivers who come to notice for traffic offences and include:

- . Drink-driver rehabilitation courses, 1974.
- . Driver improvement programme, 1982.

There have also been initiatives in the social environment which represent countermeasures in the post-crash phase, aimed at reducing the undesired consequences of road trauma. The most readily identifiable initiatives in the area of rescue services and hospital facilities are:

- . Mobile Intensive Care Ambulances (MICA), 1973.
- . Ambulance officer training courses, 1976.
- . Road rescue and salvage units, 1979.

Initiatives in the road engineering area which were intended as accident countermeasures, rather than traffic facilitation measures, are more difficult to identify. However, throughout

the period traffic management programmes have been implemented at locations which have been identified as having a poor safety record, generally on an ad-hoc basis. In the late 1970's, investigations by the CRB and RoSTA resulted in the instigation of a combined "black spot programme". In 1982/83 this became one of the programmes included in the RoSTA Traffic Facilities Programme.

### 3.2 EFFECTIVENESS OF COUNTERMEASURES

The previous sections have detailed the large number of countermeasures which were introduced in Victoria during the last twenty years. The complexity of Figure 14 indicates that it is not possible, by any simple means, to ascribe the improvements in the road trauma problem in Victoria to specific countermeasures. Accordingly, the approach adopted was to examine the evidence regarding the effectiveness of individual countermeasures, and to relate effective countermeasures to the trends in road trauma.

Only some of the countermeasures introduced in Victoria since 1960 have been evaluated in any systematic way to determine their effectiveness. Those which have been evaluated are predominantly of the legislative type. The following sections briefly describe the evaluations which have been reported.

#### 3.2.1 Compulsory motorcycle rider helmet wearing legislation (January 1961)

The law resulted in the wearing of helmets by motorcyclists rising from approximately 56% to virtually 100%. A study of the change found that the risk of fatal injury for a motorcyclist involved in an accident and wearing a helmet was about one third of the risk without a helmet. During the two years following the legislation, motorcyclist fatalities were reduced by half at a very low cost per fatality saved (Foldvary and Lane 1964), suggesting that the law was a highly cost-beneficial countermeasure.

### 3.2.2 Probationary licence system (June 1964)

An early study of the probationary licence system was made before the addition of the "P" plate requirement and 80 km/h speed limit for first year drivers in 1969. During the first full year the system was in effect, the study found no evidence of a change in the casualty accident involvement rate of drivers aged 18-24 years compared with the rate in an earlier period (Harper 1967). However the drivers affected by the system represented approximately 10% of the 18-24 years age group, suggesting that the study was too insensitive to be conclusive. It was also suggested that a system like that in New South Wales since January 1966, where first year drivers display a distinctive identifying badge on their vehicle, may be more effective (Harper 1967).

### 3.2.3 "P" plate and speed limit for first year drivers (March 1969)

This change brought the Victorian situation for first year drivers into line with the provisional licence scheme in New South Wales. No evaluation of the new Victorian scheme has been published, apart from two studies of the travel speed behaviour of "P" plate drivers which showed that their average speed was 10-15 km/h slower than that of other drivers on 100 km/h speed limit roads in 1976 (Davis 1976) and 1983 (Manders 1983a).

An evaluation of the provisional licence scheme in New South Wales found a small reduction in the accident rate of first year drivers, but the authors were cautious about the conclusion because of doubts about the validity of their data (Henderson and Messiter 1970).

#### 3.2.4 "Give way to the right" intersection priority regulation (September 1964)

This regulation was intended to reduce doubts regarding priority at intersections. A study at the time concluded that there is a strong inference, although no conclusive proof, that the change in priority rule contributed to an observed increase in angle collisions at intersections lacking any form of traffic control (Harper 1967). Perhaps the most that can be said is that there is no evidence that the new regulation reduced uncertainty and decreased intersection accidents.

#### 3.2.5 Blood alcohol limit of 0.05% (February 1966)

This legislation was introduced simultaneously with the change in closing time of licensed premises from 6 pm to 10 pm, which prevented evaluation of the effect of the law alone. The number of drivers apprehended and breath tested increased from 1,218 in 1961 to 4,178 in 1967. A study found a substantial shift in the times of occurrence of serious traffic accidents but virtually no change in the total number of crashes and deaths (Birrell 1975). It has been suggested that the absence of a reduction in road trauma was due to the low level of publicity about the new legislation and the low severity of drink-driving penalties then pertaining (Ross 1981).

#### 3.2.6 Australian Design Rules (ADRs) for motor vehicle safety (commenced January 1969)

ADR4, which initially required seat belt fitting in front seats only of 1969 model cars onwards, complemented the earlier (October 1964) requirement for seat belt anchorages in front seating positions. Seat belt fitting in front seats rose from 20% in 1965 to 29% in 1967, 50% in 1969, and 76% in 1971 (Andreassend 1972). The rate continued to rise through the 1970's as early model cars were scrapped, to reach virtually 100% in November 1982 (Manders 1983b). Extensions to ADR4 required

seat belt fitting in rear seats, resulting in a fitting rate of over 90% in 1982 (Manders 1983b), and required inertia reel belts to be fitted in front seats of 1975 models onwards, resulting in improved manner of wearing and approximately 10% higher usage rates (Carter 1979).

The February 1974 legislation requiring retrofitting of seat belts to the front seats of October 1964 to 1968 model cars also contributed to the front seat fitting rate, resulting in an estimated 6-13% extra cars with front seat belts available (Boughton and Cameron 1976).

The effect of seat belt availability in contributing to a reduction in road trauma will be discussed in conjunction with the compulsory wearing legislation, since it was only since that law came into effect that definitive evaluations have been carried out. However, a number of other safety-related ADRs have been evaluated in terms of road trauma in Victoria, based on the Pattern of Injury Survey conducted by the Royal Australasian College of Surgeons in 1971-74, and on injury compensation claims to the Motor Accidents Board since 1974.

A study showed that "anti-burst" door latches and hinges required by ADR2 are effective in reducing occupant ejection. Ejection doubles the risk of severe-to-fatal injury compared with being contained in the car in the same crash circumstances. The study showed that the ADR reduces ejection of seat belt wearers as well as non-wearers (ORS 1980a).

Another study showed that "energy-absorbing" steering columns required by ADR10A can be effective in reducing the severity of injury to the abdomen/pelvis, chest and face of drivers who strike steering assemblies in some crash circumstances. The effect applies particularly to drivers involved in frontal crashes on the open road (ORS 1979a).

Head restraints required by ADR22 could be adjusted "too low" and 27% were used unsatisfactorily in this regard, especially by male occupants. A study found a 19% reduction in whiplash injuries due to the ADR22 head restraints, but only for female passengers occupying front left seats (ORS 1979b). ADR22A replaced ADR22 in 1975 models and required that head restraints be not adjustable below a minimum height. Another study found a 34% reduction in whiplash injuries due to the ADR22A head restraints, again confined to female occupants, but in this case including female drivers as well (ORS 1980b).

A preliminary study of ADR29 for side door strength was carried out based on Victorian data. This study was unable to detect a reduction in injury to occupants of ADR29 cars involved in side impacts, but the study was considered not conclusive because of various data deficiencies (ORS 1980c). An evaluation of the United States' vehicle safety standard on which ADR29 was closely based has shown that it is effective in reducing serious injuries in certain types of side impact (Kahane 1982).

### 3.2.7 Compulsory seat belt wearing legislation (December 1970)

The law resulted in an immediate increase in front seat belt wearing rates from 25% to about 50% in Melbourne, subsequently rising to 75% in May 1971 (Milne 1979). It should be noted that front seat belts were not available in more than 20% of cars at the time of the legislation. Rural wearing rates were initially lower, but continued to rise to match those in metropolitan Melbourne (Milne 1979). The front seat wearing rate was 95% in Melbourne in November 1982. Usage of lap/sash seat belts in rear seats was recorded as 75% in the same survey (Manders 1983b).

The initial effect of the legislation was a 15-20% reduction in occupant fatalities compared with the number expected in its absence (Milne 1979). Further reductions were achieved as seat belt availability increased during the 1970's (see Section 3.2.6). Two studies (Cowley and Cameron 1976, Cameron 1980) have confirmed that occupant fatality trends during the 1970's were

consistent with increasing seat belt availability and observed usage rates, with the following exceptions:

- . During 1974 there was a temporary but substantial drop in passenger (non-driver) fatalities below the expected trend, and
- . During 1979 there was a substantial decrease below the expected trend in the fatalities of occupants aged 17-29.

Local studies of the effect of seat belt use on road trauma have indicated a 60% reduction in the risk of fatal injury (Cowley and Cameron 1976) and even greater benefits to occupants aged 17-29 (Cameron 1980). Detailed studies have shown a reduced likelihood of severe injury to the head, face, chest, abdomen and legs when seat belts are worn (Nelson 1974, Cameron and Nelson 1977, Cameron 1981).

#### 3.2.8 Reduced absolute speed limit (60 mph/100 km/h) (January 1974)

There was a 10-14% reduction in casualty accidents in 1974 which occurred throughout Victoria, not just in high speed zones to which the reduction in speed limit applied. Single-vehicle casualty accidents fell by 20% in high speed zones, compared with a 5% reduction in the rest of the State. In 1975 and 1976 the accident experience returned to normal levels, suggesting that the effect of the countermeasure was for one year only (Daltrey and Healy 1980, RoSTA 1978).

Vehicle speeds on rural highways showed a reduction in 1974, with a small increase in 1975 and a return to normal levels in 1976. These changes were inconsistent with the accident changes, casting doubt on any conclusion that the 1974 reduction in casualty accidents was due to a reduction in vehicle speeds, which in turn was due to the reduced speed limit.

There was evidence of a reduction in rural travel in 1974 (Cowley 1977) and also evidence of a reduction in occupancy of accident-involved vehicles during the same year. These factors would explain at least part of the observed reduction in casualty accidents in 1974. These factors and other inconsistencies make it difficult to conclude to what extent the 1974 accident reduction was due to the reduced absolute speed limit.

### 3.2.9 Intersection control programme (METCON/STATCON) (November 1974)

This on-going programme was applied initially to the Melbourne metropolitan area, then to the rest of the State, and had resulted in the following number of new installations by 1981 (MacLean, undated):

- . 75,000 Stop or Give Way signs,
- . 400 traffic signals, and
- . 200 roundabouts.

A study was made of the initial phase of the programme, during which predominantly Stop and Give Way signs were installed at metropolitan intersections. This study found 25-40% reductions in right-angle accidents at intersections between arterial roads and minor roads, but this benefit was off-set by a 22% increase in accidents of the same type at minor intersections. The net effect was 7% reduction in right-angle accidents, but again this was off-set by an increase in other types of accidents, resulting in no overall benefit (Daltrey et al 1978).

Research on the accident reduction benefits of later phases of the intersection control programme does not appear to have been carried out, although separate investigations have been made of the effectiveness of traffic signals and roundabouts in Victoria (Section 3.2.17).

### 3.2.10 School crossing supervisor scheme (January 1976)

Some 1800 school crossings have been supervised since the inception of this scheme, predominantly flagged school crossings, but also other pedestrian crossing facilities on school routes.

No accident-based evaluation has been attempted, because of the relatively small number of accidents at school crossings. However, a study found that when a supervisor is present, there are substantial changes in behaviour of child pedestrians and drivers consistent with increased safety. Children are attracted to the crossing and are less likely to cross the road in the dangerous zone immediately adjacent. They are also more likely to cross in groups. In addition, drivers are more likely to stop before the crossing when required to do so (Cameron and Jordan 1978).

### 3.2.11 Child restraint legislation (January 1976)

Surveys showed that there was a significant relocation of children from front to rear seating positions, but no significant change in the proportion of children in front seating positions who were unrestrained (Boughton et al 1977). The overall proportion of children who were unrestrained remained almost the same from 62% in December 1975 (pre-legislation) to 61% as late as September 1980 (Boughton 1980). Available data suggests that the legislation reduced child occupant casualties by some 5-10% (Boughton 1980), presumably reflecting the lower risk of injury in rear seats, whether restrained or not, rather than any change in child restraint use.

In December 1981 the legislation was amended to require children under 8 in any seating position to use an available approved restraint. No study of the effects of this amended legislation has been reported.

### 3.2.12 Random breath testing legislation (July 1976)

The initial effect of the legislation was a relatively low level of breath testing activity, averaging about 10 hours per week, predominantly in the Melbourne metropolitan area. Nevertheless, there is some evidence that the introduction of the legislation, the accompanying publicity, and the testing activity had an effect during the first six months of reducing casualty accidents at night (when alcohol involvement is highest), particularly in the Melbourne area (Cameron 1978).

Studies have shown stronger evidence of accident reduction benefits when the Police increased their testing operations and concentrated them in areas of Melbourne at a rate of approximately 20 hours per 100 square kilometres per week. Night-time accidents involving death or hospital admission were reduced by 21-36% in the areas of Police operations during the testing period and for two weeks after (Cameron et al 1980, Cameron and Strang 1982). An analysis indicated that the concentrated random testing operations were highly cost-beneficial (Cameron and Strang 1982).

The legislation has resulted in the following numbers of random breath tests each year since its inception (Shuey 1980, Victoria Police Annual Reports, Trinca and Thomas 1983):

<u>Year</u>	<u>Random Breath Tests Performed</u>
1976 (commencing 1st July)	13,742
1977	26,890
1978	39,000
1979	79,027
1980	82,021
1981	69,805
1982	72,957

(The 1976 and 1977 totals include some preliminary breath tests taken at other than random breath test stations).

In recent years, an increasing proportion of these tests have been conducted in country areas. However, no conclusive research regarding the effect of random breath testing in country areas has been carried out.

During 1983, the Victorian Government purchased four new mobile breath testing stations which would allow the Police to test "as many as 200,000 drivers" per year (Minister for Police and Emergency Services, 1983).

### 3.2.13 Increased drink-driving penalties (December 1978)

An approximate doubling of penalties was extensively publicised by an intensive drink-drive publicity campaign during the first quarter of 1979. A survey showed that almost 80% of young males recalled having seen the campaign advertisements (Berenyi and Strang 1979). The campaign stressed the risks of being caught for drink-driving as well as the associated severe penalties (RoSTA undated).

In 1979 there was a significant reduction in the proportion of drivers killed or treated at hospital who had illegal blood alcohol concentrations (RACV 1983). The reduction was particularly marked for drivers aged 18-29, matching the substantial decrease in the fatalities of 17-29 year old occupants below the trend which would have been expected from trends in their seat belt wearing rates (see Section 3.2.7). A lower proportion of killed or injured drivers who had illegal blood alcohol levels has been observed throughout the period 1979-82 compared with earlier years, as follows (RoSTA undated):

Percentage of Drivers with Blood Alcohol Exceeding 0.05%

Year	Drivers Attending Hospital	Drivers Killed
1977	24.5%	51.7%
1978	22.5%	50.6%
1979	19.9%	41.1%
1980	19.2%	46.1%
1981	18.2%	36.9%
1982	17.7%	40.0%

It would not be appropriate to ascribe these changes in drink-driving involvement in accidents solely to the increased penalties and the associated publicity. Concentrated random breath testing operations were carried out in Melbourne in 1979, and random breath testing has continued at a high level throughout 1979-82. In addition, low alcohol content beer was introduced and heavily promoted in Victoria in early 1979, and there has been a continuing trend in drinking consumption patterns towards packaged beer rather than by the glass (Liquor Control Commission 1983). These drinking factors and drink-driving countermeasures, including the increased penalties, may have combined as a "package" to produce the observed changes.

#### 3.2.14 Graduated motorcycle licence scheme (January 1979)

This scheme restricts learner and first year probationary licensed motorcycle riders to motorcycles with engine capacity less than 260cc. A study has shown that the casualty accident rate of learner motorcyclists reduced by 30% when the scheme was fully implemented, and that the rate for first year probationary licence holders reduced by 29% (King et al 1982). No evidence has emerged that these benefits are off-set by an increase in the accident rates of second and third year probationary licensed motorcycle riders.

### 3.2.15 Radar speed detectors (December 1981)

No evaluation of the general effect of the introduction of radar speed detectors has been published. However, a study was made of an enforcement and publicity campaign in which Police in Bendigo during September-November 1982 were asked to increase the level and visibility of their speed enforcement operations (using radar, amphotometers, and marked patrol cars) within the limits of their available resources. Surveys of vehicle speeds before and during the campaign showed no difference in speed behaviour (Manders 1982).

### 3.2.16 Publicity campaigns

Five major publicity campaigns have been studied in terms of their effect on safety-related behaviour and knowledge, but, except in one case, no evaluations in terms of road trauma reductions have been reported.

A motorcycle conspicuity campaign in 1977 produced a 27% increase in daytime headlight use and an increase in the use of conspicuous clothing, at least temporarily (Huebner 1980). The 1979 campaign regarding increased drink-driving penalties was recalled by 80% of young males when asked whether they had seen the advertisements (Berenyi and Strang 1979). The child restraint campaign later in 1979 resulted in a 20% increase in child restraint sales and a 15% increase in the use of restraints by children aged 10 months to 4 years (Wood undated). A combined publicity and enforcement campaign in 1981 aimed at increasing rear seat belt usage resulted in an 86% increase in this behaviour (Milne et al 1982) which was maintained as late as November 1982 (Manders 1983b). A follow-up study showed a 17% reduction in death and injury to rear seat occupants during the 6 months after the campaign (RoSTA 1983). However, a radar speeding campaign in 1982 was unable to produce a change in speed behaviour, no matter whether accompanied by increased enforcement activity or not (Manders 1982).

The typical cost of a multi-media campaign for 2-3 months involving television, radio and printed media (posters, leaflets and stickers) was approximately \$120,000 - 140,000. Large campaigns were more expensive, with the rear seat belt campaign costing \$200,000 (Milne et al 1982). Given the effects of this campaign on rear seat casualties, it was probably cost-beneficial. In the absence of evidence of the effects of the other campaigns on road trauma, it is not possible to judge whether they were cost-beneficial.

### 3.2.17 Road engineering countermeasures

Local studies have been carried out to determine the accident reduction effects of the following road engineering countermeasures implemented in Victoria.

- . **Intersection Signalisation.** A study of 41 intersections in urban areas with a speed limit of 60 km/h has shown a 55% reduction in casualty accident rates. A similar study of 53 intersections with a speed limit of 75 km/h or higher has shown a 41% reduction in casualty accident rates. In both instances reductions at cross roads were higher than at Tee-junctions (RCA 1983).
- . **Roundabouts.** A study of casualty accident rates at 73 roundabouts in Victoria illustrated casualty accident reductions ranging from 95% on minor residential streets to 59% on arterial/sub-arterial roads (RCA 1983).
- . **Staggered-Tee Intersections in Rural Areas.** It has been well established that cross-road intersections have a greater accident involvement than Tee-junctions in rural areas. By investigating 28 intersections where the cross configuration has been amended to a staggered-tee, it has been shown that there was an 80% reduction in casualty accident numbers and rates (RCA 1983).

Raised Reflective Pavement Markers (RRPM). A study of 550 km of rural two lane highway showed a 15% reduction in the casualty accident rate following the installation of RRPM (RCA 1983).

Corner Cube Reflective Delineators. An analysis of data for a section of the Calder Highway between Gisborne and Woodend showed a 60% decrease in night time accidents after the installation of corner cube delineators, compared with a 21% decrease on comparable sections of highway where no change was made (RCA 1983).

Street Lighting. A study of a short urban section of the Princes Highway East produced some evidence of a decrease in night time casualty accidents (RCA 1983). Studies carried out overseas and in Australia have shown that a 30% reduction in night time casualty accidents can be achieved (Turner 1972). However it has been suggested that it is unlikely that an arguable case for justification of lighting expenditure on the basis of savings in road accidents alone will ever be made (Vincent 1983).

### 3.3 SUMMARY OF COUNTERMEASURE EFFECTS

This section summarises those countermeasures which have been shown individually or collectively to be effective in reducing road trauma in Victoria and attempts to link them with the trends in road trauma described in Chapter 2. Because of the distinctly different trends by road user type, a summary has been produced for vehicle occupants, motorcyclists and pedestrians separately.

### 3.3.1 Vehicle Occupant Countermeasures

There is evidence that the following countermeasures have been effective in reducing road trauma to vehicle occupants in Victoria during 1960 to 1983:

- . Australian Design Rules for motor vehicle safety covering
  - seat belt fitting,
  - "anti-burst" door latches and hinges,
  - "energy-absorbing" steering columns, and
  - head restraints.
  
- . Compulsory seat belt wearing legislation.
  
- . Reduced absolute speed limit (possibly for one year only).
  
- . Seat belt retro-fitting legislation
  
- . METCON/STATCON intersection control programme at intersections where traffic signals and roundabouts were installed.
  
- . Child restraint legislation.
  
- . Random breath testing legislation, accompanying publicity, and initial testing activity (possibly for six months only)
  
- . Random breath testing operations concentrated in areas of Melbourne.
  
- . Increased drink-driving penalties (1978) and accompanying publicity. Possibly effective only in conjunction with the random breath testing legislation and testing operations.
  
- . Rear seat belt publicity and enforcement campaign.

- Road engineering countermeasures, namely
- traffic signals at intersections,
  - roundabouts,
  - staggered-tee intersections in rural areas,
  - raised reflective pavement markers,
  - corner cube reflective delineators, and
  - increased street lighting.

At least these countermeasures, and perhaps a number of other factors influencing road trauma (Chapter 4), appear to be responsible for the general improvement in vehicle occupant safety in Victoria, especially since 1970.

A sub-set of these countermeasures have broad applicability to nearly all vehicle occupants and appear to be responsible for the major discontinuities in the vehicle occupant casualty trend since 1960, namely

(a) Countermeasures leading to increased seat belt use:

- . Australian Design Rules for seat belt fitting,
- . Seat belt retro-fitting legislation, and
- . Compulsory seat belt wearing legislation,

(b) Reduced absolute speed limit (Possibly effective for one year only)

(c) A "package" of drink-driving countermeasures:

- . Random breath testing operations, in particular those concentrated in Melbourne.
- . Increased drink-driving penalties (1978), and
- . Publicity regarding the increased penalties and Police operations.

### 3.3.2 Motorcycle Countermeasures

In addition to those vehicle occupant countermeasures above which were also applicable to motorcyclists, the following countermeasures have been effective in reducing road trauma to motorcyclists in Victoria during 1960 to 1983:

- . Compulsory motorcycle rider helmet wearing legislation,
- . Graduated motorcycle licence scheme, and
- . Motorcycle conspicuity campaign.

It has not been possible to link these countermeasures with discontinuities in the motorcyclist casualty trend since 1960.

### 3.3.3 Pedestrian Countermeasures

Only the school crossing supervisor scheme has been evaluated and shown to be an effective pedestrian countermeasure. There was no discontinuity in the pedestrian casualty trend to which the introduction of the scheme could be linked.

## 4. OTHER FACTORS INFLUENCING ROAD TRAUMA DURING 1960-1983

### 4.1 INTRODUCTION

Apart from countermeasures deliberately introduced with the primary objective of reducing road trauma, there have been a number of other factors operating in Victoria during the last twenty years which had an influence on road trauma trends. These range from demographic factors like population increases, through socio-economic factors like car ownership and road travel, to improvements in the physical and social environments like upgraded road facilities and medical services.

Changes in these factors and their influence on road trauma will be briefly described in the following sections.

#### 4.2 POPULATION

The population of Victoria has increased from approximately 2.9 million in 1960 to some 4.0 million in 1982, an average annual increase of about 50,000 (ABS).

This increase in population, however, does not match the increase in vehicle population of approximately 60,000 vehicles per annum.

The relationship between the increase in population, vehicles registered, and vehicle use represented by fuel consumption, is illustrated in Figure 15.

#### 4.3 VEHICLE NUMBERS

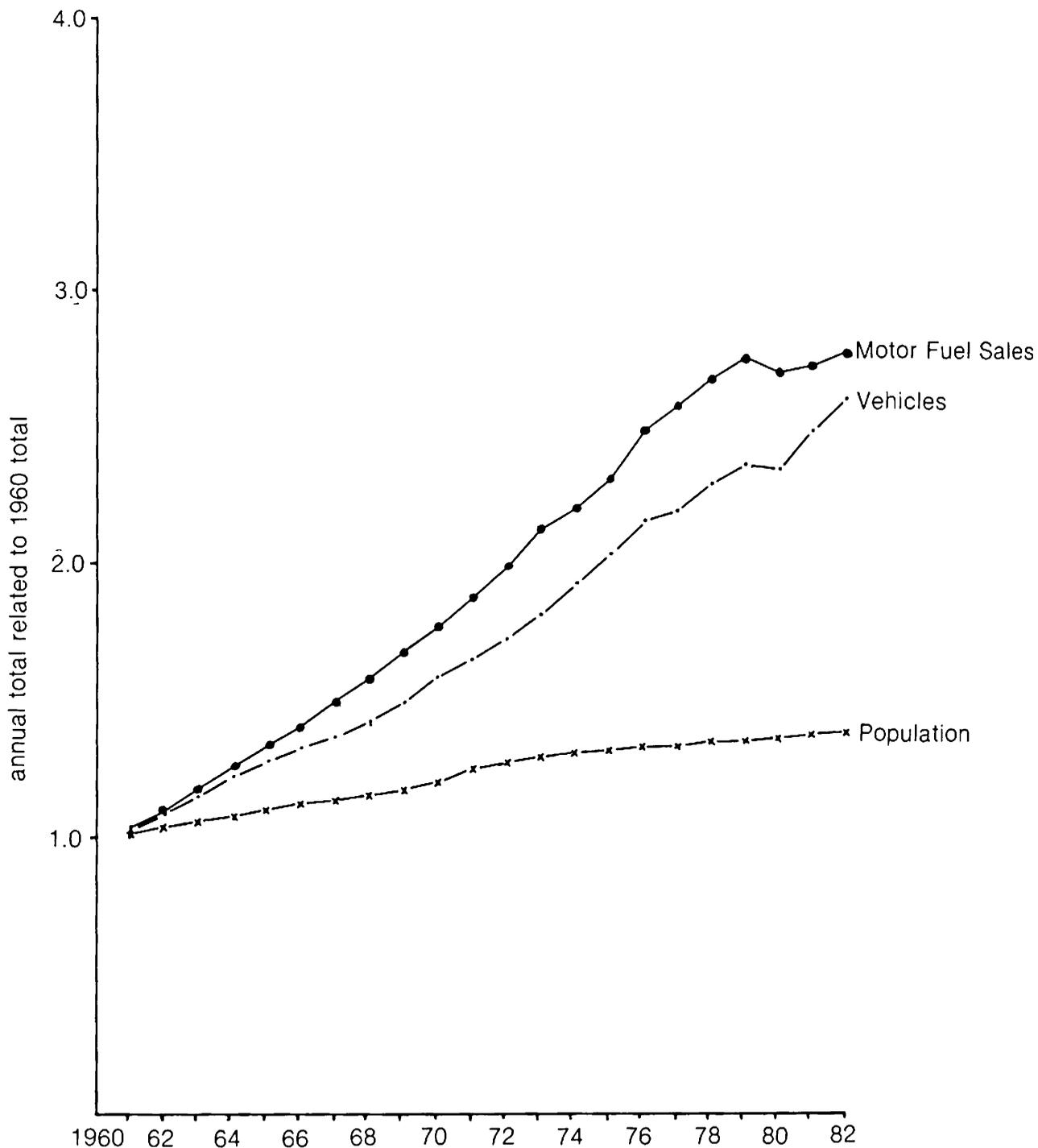
The total vehicle fleet registered in Victoria has increased from 831,000 in 1960 to 1,321,000 in 1970 and subsequently to 2,172,000 in 1982 (ABS).

The major proportion of this increase has been in the passenger vehicle fleet which has almost tripled in the period, rising from 612,000 in 1960 to 1,731,000 in 1982. At the same time the commercial fleet has nearly doubled, increasing from 200,000 to 366,000.

The increase in motor cycles has been even more dramatic rising from 19,000 to 74,000. However, these vehicles still represented only some 3% of total vehicles in 1982.

Figure 15

### COMPARISON OF GROWTH IN POPULATION, VEHICLE REGISTRATIONS AND MOTOR FUEL SALES



Source: Australian Bureau of Statistics  
Australian Institute of Petroleum

Note: Each factor has been indexed to a value of 1.0 for 1960

#### 4.4 VEHICLE AVAILABILITY

In the period 1960 to 1982 there has been a significant increase in the number of families with a vehicle available and a trend towards families having the use of a second vehicle (ABS):

- . In 1966, 76% of families had a vehicle available whilst 24% of families had two vehicles or more available.
- . In 1976 these percentages had increased to 83% and 36%, respectively.
- . In 1981 further increases in car availability were reflected by percentages of 86% and 42%, respectively.

This increase in vehicle availability emphasises an increased opportunity for all members of the family to use private vehicles for travel.

#### 4.5 VEHICLE USE

Periodic vehicle usage surveys (ABS) illustrate the increased total distance travelled by vehicles registered in Victoria:

- . In 1971 approximately 22,775 million km were operated by Victorian vehicles (excluding buses).
- . In 1976 and 1979 this had increased to some 28,362 and 29,957 million km respectively.
- . By 1982 the total had further increased to 32,528 million km.

These increases do not reflect the increased vehicle fleet, because for each year the average annual distance driven by vehicles registered in Victoria has been reduced; being estimated at 16,400 km in 1971, and 15,500 km in 1982.

The increase in vehicle usage throughout the period can also be measured by motor fuel sales, although the relationship between the two need not be direct because of the different fuel consumption characteristics of vehicles in the 1960's and 1980's. Consumption of fuel (both motor spirit and distillate) has increased from 1,994 million litres in 1960 to 5,575 million litres in 1982, increasing by a factor of 2.8.

The reduction in motor fuel sales in 1980 has been attributed to a combination of more fuel efficient vehicles, the trend towards smaller cars, and the economic climate. However, the latter was probably the most significant factor in that in November 1979 the world oil price was \$US24 a barrel, but by November 1980 it had risen to \$32 a barrel. This was reflected in the price of petrol in Victoria rising from 24 cents/litre to 32 cents/litre in the same period (AIP).

#### 4.6 CAR SIZE

The rate of increase in the proportion of small vehicles, defined as less than 1100 kg, in the total passenger vehicle fleet has been approximately 0.7% per annum or about 11,000 vehicles per year (ABS). The resulting ratio of small to large vehicles in Victoria is approximately 1 to 1.5 (ABS).

Studies (Foldvary and Potter 1970, Yu 1975, Fox et al 1979, Lee et al 1980) have shown that smaller vehicles have a lower risk of accident involvement. However, the smaller the vehicle the greater is the probable severity of injury to its occupants if involved in an accident (Grime and Hutchinson 1977, Fox et al 1979, National Highway Traffic Safety Administration 1980, Insurance Institute for Highway Safety 1981). In Victoria it has

been estimated that occupant casualty rates for the lightest passenger cars are 1.9 times higher than for the heaviest passenger cars (Healy 1982b).

Despite this increased risk of injury, the move from large to small vehicles has been sustained because of the potential benefit in fuel saving, especially as fuel prices continue to increase. In terms of total community benefits, this trend may be acceptable because it has been shown (Carlson 1978) that the benefit in fuel savings is approximately twice as great as the cost, in monetary terms, of additional injuries.

#### 4.7 ALCOHOL CONSUMPTION PATTERNS

In the period from 1964 to 1982, there were substantial changes in beer consumption patterns in Victoria (Liquor Control Commission 1983):

- . The proportion of beer sold in packaged form has increased from 53% to 71%. The remainder is sold in bulk form and ultimately by the glass.
- . The proportion of beer consumed on hotel premises has declined from 43% to 25%.
- . The proportion of beer, either packaged or in bulk, sold by hotels has declined from 83% to 65%.

In addition, the overall consumption of beer per capita declined at the rate of 2-3% per annum in Victoria during 1974 to 1982 (Liquor Control Commission 1983). If Victoria is representative of all Australia, this reduction in beer consumption was offset by an increase in wine consumption. The per capita consumption of wine has increased nearly four-fold during the last twenty years (RTA undated).

Accompanying this trend towards wine consumption has been an increase in the number of licensed restaurants and licensed clubs in Victoria. The number of these establishments per capita has more than doubled since 1961 (RTA undated). This trend may have had important road safety implications since it suggests that the traditional places of alcohol consumption have changed and that food and alcohol may have been consumed together to a greater extent in recent years.

Another change in alcohol consumption patterns relates to the introduction and extensive promotion of low alcohol beer in Victoria in March 1979 (Strang et al 1980).

#### 4.8 MEDIA CAMPAIGNS

Over the last twenty years in Victoria, there have been numerous road safety campaigns conducted by the media, especially the printed media. Unfortunately, the extent of this activity is undocumented.

It has been suggested that there has been an increased public interest in road safety heightened by the media (RoSTA 1983). The media has been seen as playing a major role in creating a climate of public awareness and acceptance of countermeasures. The Sun newspaper's "1034" campaign has been considered at least partly responsible for the introduction of the compulsory seat belt wearing legislation in December 1970. Further, it has been suggested that the 1034 campaign, and other media campaigns which followed, helped ease the introduction of Victoria's "controversial" random breath testing legislation in July 1976 (Morgan 1980).

Unfortunately, there is little evidence to support a changing trend in public attitudes towards road safety, either due to media campaigns or other influences. In 1962, a public opinion poll found that only 1% of Australians saw seat belts as an important safety measure, whereas a similar poll in 1970 found

that 75% of respondents rated seat belts as "very important" (Morgan 1980). However, repeated and consistent surveys of this type, relating to attitudes towards important road safety issues in Victoria, are almost non-existent.

#### 4.9 EMERGENCY RESCUE SERVICES

Ambulance services in Victoria, as a whole, experienced consistent growth in the period 1963-1983 inclusive. The number of ambulance units increased from about 206 in 1963 to some 384 in 1983, while branches increased from 86 to 141 in the same period. Furthermore, the number of ambulance officers has more than doubled - from about 440 in 1963 to more than 1,160 in 1983.

The number of ambulances per head of population has also improved from approximately 1:15,000 in 1963 to about 1:10,400 in 1983. Similarly, during the same period, there has been an improvement in the number of ambulance officers per head of population, with the ratio falling from about 1:6,900 in 1963 to approximately 1:3,400 in 1983. Evidence presented to the Inquiry suggests that this ratio compares favourably with that which prevails interstate or overseas (Archer 1983).

The ratio of ambulance officers to ambulances has increased from about 2:1 in 1963 to about 3:1 in 1983, reflecting the trend in urban areas towards two-man ambulance units. However, a considerable number of rural based ambulance services still operate one-man ambulances.

Victoria's largest ambulance service, the Ambulance Service-Melbourne, has also grown considerably in the period 1963-1983. This service, which is responsible for the bulk of the Melbourne metropolitan area, and almost two-thirds of Victoria's population, now has 100 vehicles compared with 62 in 1963. The number of Melbourne branches has increased from 7 to 17 over the same period. In addition, Mobile Intensive Care Ambulances were introduced in 1973, now totalling five in the Melbourne Ambulance District.

The training of ambulance officers has been upgraded in the period 1963-1983. Formal ambulance officer training first became a condition of employment in 1965. In 1976 the training requirements were substantially upgraded so that training now takes place over 3 years for 13 weeks per year, and includes formal certification from the TAFE network.

Fire brigades also provide rescue services for persons involved in road accidents. Rescue unit attendances at accidents increased from around 150 per annum in the early 1960's to approximately 350 per annum in the 1980's. In 1979 there was a substantial increase in rescue facilities in Melbourne, with three specialized road rescue units being introduced.

The Victorian State Emergency Service (SES) was established as a permanent emergency service in 1977 and currently provides a 24 hour, statewide emergency rescue service which is available for road accident work, predominantly in rural areas (the Metropolitan Fire Brigade Board maintains prime responsibility for road rescue within the Melbourne metropolitan area). It has a core of full-time Headquarters, Divisional and Regional officers, but relies on voluntary personnel to man its 124 decentralised units (most of which carry equipment suitable for road rescue work). The Service's 1,503 trained personnel are capable of rendering first aid to injured road accident victims and providing on-site lighting and communication facilities. Where full-time rescue services are available, particularly in the Melbourne metropolitan area, SES units often provide "back-up" at road accident scenes.

Since its establishment, the number of road accidents attended by SES units (per annum) has steadily increased. In 1977/78, SES units attended 167 road accidents, 385 in 1980/81 and 455 in 1982/83. Given the rural-decentralised structure of the service, it is not surprising that the greatest increase in the number of accident attendances has occurred in rural areas.

#### 4.10 HOSPITAL CASUALTY FACILITIES

Investigations into trends and improvements in the area of hospital casualty facilities were considerably hampered by the lack of readily available collated data.

As the Health Commission does not hold information on trends in the development of hospital casualty facilities, the Commission undertook a survey of the past and present status of Victorian hospitals on behalf of the consultants. Seven hospitals responded to the survey in time for inclusion in this report.

Based on the data obtained, it would seem that hospital casualty services have experienced constructive improvements in the period 1963-83. It appears that:

- . The larger, urban or regional-base hospitals have experienced increases in the number of medical and nursing staff (particularly more senior resident medical officers) on duty in emergency departments both day and night.
- . The emergency departments of most major road trauma hospitals are now supervised by a senior medical officer, appointed as director or supervisor.
- . The availability of specialist medical practitioners, such as surgeons and anaesthetists, for road trauma work in emergency departments has increased.
- . The availability of facilities such as x-ray, pathology, operating theatres, etc., has improved, though not necessarily across the board.

The bulk of the apparent improvement, at least in quantitative terms, has occurred since 1973, particularly since 1978.

A 1977 report to the Minister of Health on road accident victim reception in Melbourne metropolitan hospitals concluded that there was room for improvement in the staffing and facilities of most hospital emergency departments (Rank et al, 1977).

A recent innovation in the co-ordination of hospital casualty facilities is the tri-partite classification of metropolitan hospitals based on their capacity to receive and cope with accident cases (including road trauma victims). Level Three hospitals are assessed as having the greatest capacity to receive accident cases. Under this classification system, serious road trauma victims are directed primarily to Level Three hospitals, while Level One and Two institutions receive less severe cases.

To investigate the benefits of surgeons being readily available for road trauma work in hospital emergency departments, the Motor Accident Board is currently conducting a trial at the Alfred Hospital whereby an experienced surgeon is attached to the emergency department to deal with road trauma cases.

#### 4.11 ROAD FACILITIES

During the last twenty years there have been major improvements in the State's road network:

- . In 1960 there were no freeways and only 2% of the 6,189 km of declared State highways were duplicated (ie, divided highways).
- . In 1971 there were some 75 km of freeways and the length of State highways duplicated had increased to nearly 4% of the total 7,145 km.
- . In 1982 there were 324 km of freeways and the 340 km of duplicated State highways represented some 5% of the total network (CRB Annual Reports).

The better safety record of the freeways and duplicated sections of highways could have been a factor in the reduction in the road accident problem in Victoria. Freeways have an accident rate approximately 17-25% of the accident rates applicable to two lane rural roads and urban arterial roads (CRB 1981). Divided roads have a 10-30% better safety performance than the equivalent undivided road (Grayling 1980).

In parallel with the improvements in road facilities, there have been significant advances in the use of traffic management techniques, not only to increase traffic facilitation but also to improve road safety.

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LIST OF SUBMISSIONS

Government Departments, Authorities, Agencies

Commonwealth Scientific and Industrial Research Organisation  
Department of Civil Engineering, Monash University  
Department of Community Welfare Services - Victoria  
Department of Mechanical Engineering, University of Melbourne \*  
Law Department \*  
Metropolitan Fire Brigades Board  
Metropolitan Transit Authority \*  
Ministry for Police and Emergency Services  
Ministry of Consumer Affairs  
Motor Accidents Board  
Office of Road Safety, Commonwealth Department of Transport \*  
Road Construction Authority \*  
Road Traffic Authority \*  
State Electricity Commission of Victoria \*  
State Transport Authority \*  
Traffic Safety Education - Sub-committee of the Safety Education  
Committee, Education Department \*  
Victoria Police \*  
Victoria Police Surgeon \*  
Victoria State Emergency Service

Local Government

City of Ararat  
City of Ballarat  
City of Broadmeadows  
City of Camberwell  
City of Coburg  
City of Collingwood  
City of Croydon  
City of Echuca  
City of Fitzroy  
City of Frankston  
City of Footscray  
City of Geelong  
City of Hamilton  
City of Knox  
City of Melbourne  
City of Northcote  
City of Nunawading  
City of Preston  
City of Ringwood  
City of Shepparton

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## Local Government (cont'd)

City of Springvale  
City of St Kilda \*  
Shire of Bellarine  
Shire of Bulla  
Shire of Buln Buln  
Shire of Cobram  
Shire of Goulburn  
Shire of Melton  
Shire of Mornington  
Town of St. Arnaud

## Institutions, Associations, Organisations

Alan Jones Driving Centre Pty Ltd  
Alfred Hospital  
Amberlite Sales Pty Ltd \*  
Ambulance Service - Melbourne  
Australia Constitutionalists  
Australian Optometrical Association - Victorian Division  
Australian Red Cross Society (Victorian Division)  
Australian Retired Persons Association  
Australian Road Federation  
Australian Road Marking Association \*  
Australian Road Research Board \*  
Australian Society for Emergency Medicine  
Australian Thrillseekers  
Barkly Motor School  
Bicycle Institute of Victoria \*  
Bob Jane Corporation Pty Ltd  
Box Hill Hospital  
Bus Proprietors' Association (Vic.)  
Camelot Driving School \*  
Community Action for Road Education  
Concut Pty Ltd \*  
Confederation of Australian Motor Sports  
Council of Disabled Persons - Victoria  
Department of Community Medicine, St Vincent's Hospital  
Electrical Trades Union of Australia, Victorian Branch \*  
Essendon Driving School \*  
Federation of Australian Motorcyclists  
Goulburn Valley Driver Training Complex  
Injury Research Project  
Institute of Automotive Mechanical Engineers  
Life Insurance Federation of Australia  
Liquor Industry Consultative Council \*  
Melbourne Consumers Organisation  
Mosanto Australia Ltd  
Motorcycle Riders' Association \*  
National Council of Women of Victoria

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Institutions, Associations, Organisations (cont'd)

National Safety Council of Australia, Victorian Division  
Parents Against Road Tragedy  
Pilkington A.C.I. Ltd in association with Australia Autoglass Pty Ltd  
Recnac \*  
Riverton Engineering Company \*  
Road Accidents Anonymous  
Rosebank Products Pty Ltd \*  
Royal Australasian College of Surgeons - Road Trauma Committee \*  
Royal Australian Nursing Federation (Victorian Branch)  
Royal Automobile Club of Victoria (RACV) Ltd  
Sites Alive Pty Ltd \*  
Skilled Drivers of Australia Ltd  
State Bicycle Committee  
The Committee for Increased Funds for Victorian Roads  
The Country Women's Association of Victoria  
The Institute of Engineers, Australia - Victoria Division  
The Police Association \*  
The Salvation Army  
The Victorian Motor Schools Association \*  
Tildons Pty Ltd  
Traffic and Bylaw's Officers' Institute of Victoria  
Train Travellers' Association  
Transport Workers' Union of Australia - Victorian Branch  
Victorian Association of Traffic Safety Education Teachers \*  
Victorian Automobile Chamber of Commerce \*  
Victorian Council of Pedal Clubs  
Victorian Road Transport Association  
Wimteb Enterprises  
Women's Christian Temperance Union of Victoria Inc.  
W.S. Pagan and Associates  
Yellingbo Progress Association

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## Individuals

Abel N.,	Harkaway	Clarke S.,	French Island
Abrahams W.,	Pascoe Vale South	Cleghorn S.,	Altona
Archer Dr. F.,*	Richmond	Clifford J.,	Clifton Springs
Arends Mrs Y.,	Blackburn	Clode R.,	Upwey
Armstrong D.,	Hawthorn	Cohen J.,	East St Kilda
Ashmore A.,	Selby	Colbert C.,	Sale
Athanasiou A.,	Coburg	Collins P.,	Boronia
Atkins K.,	Mordialloc	Collis J.,	Box Hill
Atkinson Dr A.,	Hawthorn	Corden G.,	Murrumbeena
Atkinson Prof H.,	Eaglemont	Cotchin G.,	Reservoir
Attard B.,	Chadstone	Cowdell T.,	Elsternwick
Bail G.,	Hawthorn	Crockford Mrs L.,	Coleraine
Bailey F.J.	Glengarry	Crosbie L.,	Windsor
Bain K.,	Glenrowan	Crouch L.,	Horsham
Barnham C.,	Heidelberg	Cuddihy W.,	East Bentleigh
Bartfield H.,	McKinnon	Cullinane J.,	Sandringham
Bays P.,	Frankston	D'Abbrera B.,	Ferny Creek
Beamish M.,	Melbourne	Dandy D.,	Orbost
Becroft R.,	Benalla	Darby Miss A.,	Sale
Begg R.,	North Fitzroy	Davison S.,	Ringwood
Bennett A.,	Point Lonsdale	Davitidis M.,	Bendigo
Bennett S.,	Doncaster	Dawson W.,	Mornington
Berzins A.,	Mulgrave	Dennis P.,	Coburg
Best S.,	Wheelers Hill	Dettmer W.,	Blackburn
Bishop Mrs M.,	Vermont	Deverson Mrs M.,	Kilsyth
Blackman K.,	Caulfield	Dey W.,	Kew
Blake E.,	South Caulfield	Downie H.P.,	Greensborough
Boghossian J.,	East Burwood	Draytern E.,	Golden Square
Bouvier Dr R.,	Parkville	Duff Ms A.,	Hawthorn
Boyd Mrs M.,	Warrnambool	Dugdale E.,	Canterbury
Brain I.,*	Carnegie	Dyke G.,	Sunshine
Brain R.,	Box Hill	Ellis J.,	Dandenong
Brentnall Dr E.W.*	Melbourne	Fagg P.,	Blackburn
Bresnan B.,	Maidstone	Foletta B.,	East Ivanhoe
Brooks R.H.,	Aspendale	Fox Mrs K.,	Ararat
Bromilow S.,	Thornbury	Fraser Miss A.,	Ringwood
Brown A.J., MLA.	Hastings	Fraser L.,	Frankston
Buchanan J.,	Mt. Eliza	Frazer J.,	Terang
Bulte E.,	McKinnon	Freeman Ms I.,	Ascot Vale
Bunworth Mrs J..	Macarthur	Froud O.,	Mordialloc
Burgess R.,	Melbourne	Fry J.,	Hamilton
Burke Mrs J.,	Willaura	Gallart.,	Dimboola
Cage G.C.,	Doncaster	Gebert A.,	Blackburn South
Carter Mrs M.,	Macedon	Gelb J.,	Blackburn
Cassidy A.,	Safety Beach	Gillhespey T.,	Sunshine
Cattanach Dr J.,	Hawthorn	Goigh R.,	Warrandyte
Chapman Mrs M.,	Vermont	Grace B.,	Belmont
Chriss Mrs R.,	Mt. Waverley	Graf Rev J.,	Collingwood

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Individuals (cont'd)

Granger P.,	Oakleigh	Krongold R.,	Toorak
Grant W.,	Melbourne	Lacey R.,	Templestowe
Gray B.,	Parkdale	Langham A & P.,	Kew
Hagerty Miss P.,	Chadstone	Lawson N.,	Leongatha
Hahn R.,	Warrnambool	Lazarus L.,*	Melbourne
Halse R.,	Mt. Martha	Lazarus M.,	Melbourne
Hanharan F.,	Wodonga	Lee W.,	Lower Templestowe
Harding J.,	Glen Waverley	Leech G.,	Maryborough
Hardy J.,	Caulfield	Leyland Ms L.,	Toorak
Harley C.,	Ballarat	Lonsdale H.,	Craigieburn
Harman S.,	North Ringwood	Lovell V.,	Frankston
Harper K.,	Ringwood	Lyons A.,	Templestowe
Harrison E.,	Bairnsdale	Mackenzie Mrs. J.,	Ringwood
Hart Mrs. L.,	McCrae	Mackie-Smith E.,	East St.Kilda
Hathaway S.,	Buninyong	Marsh Ms S.,	Garfield
Hayes Mrs. M.,	Somers	Mathews A.,	Mt. Eliza
Hennessy D.,	Essendon	Mayes A.,	Somerville
Henry R.,	Glengarry West	McCarthy G.,	Northcote
Hickey J.,	Pascoe Vale	McCormick R.,	East Malvern
Hills G.,	Melbourne	McCulloch J.,	Beaumaris
Hobbs T.,	Beaumaris	McDonald T.,	Epping
Hobson E.,	Carlton	McGrath D.,	Albert Park
Holfenden Mrs M.,	Highton	McKenzie G.,	Portland
Hollow R.F.M.,	Frankston	McLeod Mrs. L.,	Mt. Waverley
Hooper R.,	Warracknabeal	McLuckie Ms W.,	North Bondi
Howard J.	Wangaratta	McPhail G.,	Burwood
Howden Mrs. J.,	Lakes Entrance	Menzel F.,	Bentleigh
Hoyle K.,	North Balwyn	Messer I.,	North Balwyn
Hughes E.,	Coburg	Messinis T.,	Preston
James Mrs G.,	Rosebud	Meyer Mrs A.,	Kaniva
Jeffries Mrs E.,	Sale	Millar T.,	Silvan
Jenkins M.,	Kew	Miller A.,	Eden Park
Johnson S.,	Springvale	Moll V.,	Mt. Waverley
Jones V.,	Avondale Heights	Molnar Mrs P.,	Kew
Jorgensen H.,	Portarlington	Morley K J.,	Park Orchards
Jubb F.,	Mooroolbark	Moore G.,	Tullamarine
Judd D.,	Frankston	Nelson W.,	Bonnie Doon
Just J.	Thornbury	Neubecker A.,	North Balwyn
Kearon M.,	Dandenong	Nichol Ms P.,	Richmond
Keep D.,	Chadstone	Nicholson H.,	Ocean Grove
Kelly W.,	North Balwyn	Nicholson L.A.,	Highett
Kennett Dr S.,	Melbourne	Nicol D.,	Toongabbie
Kierman M.,	Richmond	Nielsen W.,	Taylors Lakes
Kincaid M.,	South Blackburn	Nolan J.,	Blackburn
Kirsopp Mrs. M.,	Shepparton	Norton J.,	Carlton
Koliba K.,	Ardeer	O'Conner W.,	Geelong
Koop P.,	Mordialloc	O'Donnell W.,	Bendigo
Kricker Mrs J.,	Kew	Ogden Dr K.	Clayton

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Individuals (cont'd)

Page R.,	Sunbury	Strauks A.,	Mitcham
Park D.,	Newstead	Students	Rowville Primary School
Parker K.,	Ringwood North	Sullivan J.,	Wodonga
Paterson J.,	Cheltenham	Sullivan L.,	Cobram
Perry M.,	South Yarra	Sutcliffe P.,	Baumaris
Pettit L.,	Brunswick	Sutton Miss M.,	Prahran
Phelps J.,	Bright	Sweeney J.,	Croydon
Pilley J.,	Mulgrave	Taylor C.,	Gardenvale
Politakis K.,	Hawthorn	Taylor C.,	Red Cliffs
Pope Mrs J.,	Ringwood North	Taylor H.,	Mitcham
Price Mrs P.,	Paynesville	Taylor J.,	Noble Park
Prior V.,	Frankston	Taylor R.,	Timboon
Prissman R.,	Bright	Teague A.,	Elsternwick
Purdon H.,	Melton	Thodey H.,	Glen Waverley
Quiney Mrs H.,	Black Rock	Thomas J.,	Frankston
Quinn J.,	Kyneton	Tomkins J.,	Newtown
Rache C.,*	Elsternwick	Trask A.,	Bacchus Marsh
Reddan G.,	Baumaris	Tregale A.,	Watsonia
Reid B.,	Oakleigh	Tuohy K.,	East Bentleigh
Rice Mrs.,	Dandenong	Umbers R.,	Parkville
Riddle J.,	Vermont	Vagenas T.,	Carnegie
Robson W.,	Maryknoll	Vandeloo J.,	Glenroy
Ross P.,	Windsor	Van Den Berg A.,	Chelsea
Ross R.,	Marysville	Wallace J.,*	Sandringham
Rowe N.,	Portland	Waslin B.,	Sunshine
Royston W.,	Moonee Ponds	Watkins Mrs R.,	Croydon
Ryan B.,	Bulleen	Watson G.,	Ivanhoe
Schaffer Mrs R.,	Elsternwick	Way N.,	Yarraville
Sellars M.,	Benalla	Welsh Mrs A.,	Nunawading
Sevenge Ms D.,	Lower Templestowe	Whitmore G.,	Rosanna
Sexton M.,	Somers	Whittle M.,	Springvale
Sharpley M.,	Ballarat	Whyte G.,	Research
Simcox Mrs J.,	Mitcham	Wiguive N.,	Murrumbeena
Sims R.,	Moonee Ponds	Wilkinson Mrs B.,	Hamilton
Skoglund P.,	Frankston	Williams B.,	Noble Park
Slattery M.,	Mentone	Williams R.,	Doncaster
Smith R.,	Mt.Waverley	Wilson K.,	Heathmont
Spencer S.,	Murtoa	Wollen D.,	Dandenong
Steed Mrs. V.,	Kilsyth	Woodroffe E.,	Oakleigh
Stelling D.,	Ringwood	Worssam P.,	Mont Albert
Stevenson J.	Nunawading	Wright G.,	Watsonia
Stewart A.,	East Brighton	Yelland R.,	Mornington
Stewart Miss J.,	Warrnambool	Zuccala D.,	Hampton



**SOCIAL DEVELOPMENT COMMITTEE**

**First Report**

**upon**

**Road Safety**

**in**

**Victoria.**

**Incorporating a Report commissioned by the  
Committee and prepared by RACV Consulting  
Services on new countermeasures and research.**

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**Ordered to be printed**

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**D - No. 27/1982-84**



EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

---

Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

---

Tuesday, 31 May 1983

24. SOCIAL DEVELOPMENT COMMITTEE - The Honourable Evan Walker moved, by leave, That the Honourable K.I.M. Wright be discharged from attendance upon the Social Development Committee.

Question - put and resolved in the affirmative.

Ordered - That a Message be sent to the Assembly acquainting them of the foregoing resolution and that a vacancy accordingly exists in the membership of that Committee.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

---

Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave and question - That, contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

---

Wednesday, 1 June 1983

23. MESSAGE FROM THE LEGISLATIVE COUNCIL - acquainting the Assembly that they have agreed to a resolution discharging the Honourable K.I.M. Wright from attendance upon the Social Development Committee and notifying that a vacancy accordingly exists in the membership of that Committee.

\* \* \* \* \*

25. SOCIAL DEVELOPMENT COMMITTEE - Motion made, by leave and question - That Mr. Steggall be appointed a member of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

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## R E P O R T

The **SOCIAL DEVELOPMENT COMMITTEE**, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:-

### 1. FUNCTIONS OF COMMITTEE

The functions of the Committee<sup>1</sup> are to inquire into, consider and report to the Parliament on:-

- (a) any proposal, matter or thing concerned with the social development of the people of the state;
- (b) how the life of individuals, families and communities in the State may be improved; and
- (c) the role of Government in promoting the welfare of the people of the State.

### 2. TERMS OF REFERENCE

The Social Development Committee received a reference from the Governor in Council dated 6 October 1982 to inquire into, report and make recommendations upon the question of road safety in Victoria, and in particular -

- (a) to specify the accident countermeasures which, in the opinion of the Committee, have been proved to reduce accidents and their consequences;
- (b) to specify the accident countermeasures so proved which are not at present being used in Victoria and which in the opinion of the Committee should be introduced into Victoria;

---

1. Parliamentary Committees Act 1968, Section 4E.

- (c) to consider whether there are any countermeasures not being used in Victoria which the Committee believes would be likely to achieve a worthwhile reduction in accidents;
- (d) to report on the research which the Committee believes should be undertaken by the State -
  - (i) to obtain more knowledge of accidents; and
  - (ii) to assess the value of present or proposed accident countermeasures;
- (e) to report on any other matters which appear relevant to the inquiry, including -
  - (i) Collisions with Utility Poles and Roadside Fixtures;
  - (ii) The Effects of Drugs on Driving;
  - (iii) Head and Facial Injuries in Road Accidents;
  - (iv) Driver Education;
  - (v) Alcohol and Road Safety; and
  - (vi) The 1981 Road Toll.

### 3. COMMENT

Attached as Appendix I, is a Report commissioned by the Social Development Committee as part of its reference from the Governor in Council to inquire into, report and make recommendations upon the question of road safety in Victoria.

To assist in the Inquiry the Committee engaged the R.A.C.V. Consulting Services, a professionally independent group with the Royal Automobile Club of Victoria (R.A.C.V.) Limited. The study team comprised:

M.H. Cameron, M.Sc., F.S.S. (Project Director);  
 J.T. Sanderson, B.Sc., Dip.T.E., M.C.E.;  
 J.A. McKenzie, M.Eng.Sc., G.Dip.H. & T.E., M.I.E. Aust.;  
 R.J. Christie, B.A., Dip.Ed., Dip.Ed.Psych.

An Interim Report based on the research of the consultants was tabled in Parliament on 16 November, 1983, which outlined the trends in road trauma and road safety countermeasures introduced over the past twenty years.

The Report below presents the views of the consultants and their findings recommending new countermeasures which could reduce road trauma in Victoria in a cost-beneficial manner, as well as research needed and institutional improvements.

The Report is printed here as received by the Committee; the views it contains are those of the Consultants. The Committee does not, by publishing the Report, signify its endorsement of it or of any of its recommendations. The Report is published in accordance with the Committee's policy of making available as much as possible of the evidence upon which it is basing its deliberations. The Committee's final report will indicate countermeasures accepted by the Committee and the major findings of the Inquiry.

Because of the wide ranging social and economic implications of many of the recommendations being considered by the Social Development Committee, the Committee requires additional time for further consideration of these recommendations prior to tabling of the Final Report.

Committee Room

2 May 1984

APPENDIX I

# ROAD SAFETY IN VICTORIA

NEW COUNTERMEASURES  
AND RESEARCH

presented by

***RACV Consulting Services***

to the

SOCIAL DEVELOPMENT COMMITTEE  
OF THE PARLIAMENT OF VICTORIA

FEBRUARY 1984

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## ABBREVIATIONS

AAA	AUSTRALIAN AUTOMOBILE ASSOCIATION
ACRUPTC	ADVISORY COMMITTEE ON ROAD USER PERFORMANCE AND TRAFFIC CODES (OF ATAC)
ACSVD	ADVISORY COMMITTEE ON SAFETY IN VEHICLE DESIGN (OF ATAC)
ARRB	AUSTRALIAN ROAD RESEARCH BOARD
ATAC	AUSTRALIAN TRANSPORT ADVISORY COUNCIL
BIV	BICYCLE INSTITUTE OF VICTORIA
CRB	COUNTRY ROADS BOARD (NOW RCA)
EGORS	EXPERT GROUP ON ROAD SAFETY (AUSTRALIAN DEPARTMENT OF TRANSPORT)
HRSCRS	HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON ROAD SAFETY
IIHS	INSURANCE INSTITUTE FOR HIGHWAY SAFETY, USA
MRA	MOTORCYCLE RIDERS ASSOCIATION
MSD	MELBOURNE STATISTICAL DIVISION
MAB	MOTOR ACCIDENTS BOARD
NHTSA	NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION, USA
NRMA	NATIONAL ROADS AND MOTORISTS ASSOCIATION (NSW)
OECD	ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
ORS	OFFICE OF ROAD SAFETY, DEPARTMENT OF TRANSPORT AUSTRALIA
RACS	ROYAL AUSTRALASIAN COLLEGE OF SURGEONS' ROAD TRAUMA COMMITTEE (VICTORIA)
RACV	ROYAL AUTOMOBILE CLUB OF VICTORIA LTD.
RBT	RANDOM BREATH TESTING
RCA	ROAD CONSTRUCTION AUTHORITY
RoSTA	ROAD SAFETY AND TRAFFIC AUTHORITY (NOW ROAD SAFETY AND TRAFFIC BUREAU OF THE RTA)
RTA	ROAD TRAFFIC AUTHORITY (VICTORIA)
SDC	SOCIAL DEVELOPMENT COMMITTEE OF THE PARLIAMENT OF VICTORIA
VACC	VICTORIAN AUTOMOBILE CHAMBER OF COMMERCE
VSAC	VEHICLE STANDARDS ADVISORY COMMITTEE (OF ATAC)

## 1. INTRODUCTION

### 1.1 PREAMBLE

During 1983, the Joint Investigatory Social Development Committee of the Parliament of Victoria conducted an Inquiry into Road Safety in Victoria.

To assist it in the Inquiry, the Social Development Committee engaged RACV Consulting Services to provide technical assessments of existing and proposed road accident countermeasures.

The consultants' first report to the Committee, on existing countermeasures and their effect, was incorporated in the Committee's interim report to the Parliament (SDC 1983).

This report recommends new countermeasures which could reduce road trauma in Victoria in a cost-beneficial manner, as well as research needed and institutional improvements.

### 1.2 THE ROAD ACCIDENT PROBLEM

Road accidents in 1982 resulted in 709 fatalities, over 8,000 persons admitted to hospital, over 20,000 reported injuries and over 100,000 property damage accidents. This represents an estimated cost of at least \$500 million to the Victorian community (RoSTA 1983a). A preliminary figure of 662 persons killed on Victorian roads during 1983 has been released (RTA 1984).

A brief resume of the basic facts related to road accidents in Victoria illustrates the major problem areas, and those to which the proposed countermeasures have been mainly addressed:

- . 70% of all reported casualty accidents\* occurred in the Melbourne Statistical Division (MSD).
- . 60% of all reported casualty accidents in the MSD occurred at intersections compared with 37% of such accidents in the rest of the State.
- . 64% of all reported casualty accidents in the MSD were vehicle to vehicle collisions, 15% involved pedestrians and 15% involved striking a fixed object or parked car.
- . 47% of all reported casualty accidents in the rest of the State, excluding the MSD, were vehicle to vehicle collisions, 7% involved pedestrians and 25% involved striking a fixed object or parked car, whilst 12% ran off the road without striking an object.
- . 51% of fatalities occurred in the MSD and 49% in the rest of the State.
- . 51% of fatalities in the MSD were vehicle occupants, 32% were pedestrians, 13% were motorcyclists and 4% were bicyclists.
- . 77% of fatalities in the rest of the State, excluding the MSD, were vehicle occupants, 9% were pedestrians, 10% were motorcyclists and 4% were bicyclists.

Although not specifically related to the 1982 data, studies have shown that:

- . Probationary licensed drivers have a significantly higher casualty accident rate per licensed driver than full licence

-----

\*Detailed information on road casualty accidents in Victoria was available only as late as 1981

holders, with the rate of first year drivers being four times higher (Deutsch et al 1981). Probationary drivers are involved in 25% of casualty accidents, yet hold only 11% of licences issued (Healy 1982).

Motorcycle learner permit holders are over-involved in casualty accidents, their rate being twice that for probationary drivers of both cars and motorcycles, three times that for motorcycle licence holders and 22 times that of car learner permit holders (Swann 1982b).

Drink-drivers have twice the risk of accident involvement at a blood alcohol level of 0.05% compared with sober drivers, the risk rising to at least ten times at 0.15% (Borkenstein et al 1964, McLean et al 1980). Forty per cent of drivers killed and 18% of drivers attending hospitals during 1982 had illegal blood alcohol levels (RoSTA undated).

### 1.3 COMPONENTS OF THE ROAD ACCIDENT PROBLEM

Traffic crashes can be considered as consisting of three phases: Pre-crash, crash and post-crash. The pre-crash phase relates to those events leading up to undesired energy release, which in turn leads to human or material damage. The pre-crash phase can be further subdivided into three sub-phases, each of which may be targets for countermeasures:

- . Exposure to the road traffic system,
- . Energy build-up in the form of kinetic energy, and
- . Crash involvement.

The crash phase relates to the dissipation of released energy through human or material damage. Countermeasures in this phase aim to limit the effect of this damage, often by sacrificing material damage to prevent human injury.

The post-crash phase relates to the longer term consequences of the human or material damage, for example death or permanent disability. Countermeasures in the post-crash phase aim to limit these consequences by such actions as emergency treatment at the crash scene and road trauma treatment facilities.

As well as these three phases of road accidents, there are three general components; road users, vehicles, and the road environment.

Road users may be either drivers, passengers, motorcyclists, bicyclists, or pedestrians. Vehicles involved could be cars, motorcycles, bicycles or commercial vehicles. The road environment includes not only the road itself but also the immediate roadside.

These three components are each embedded in the general social environment which may have an influence on the three specific traffic components, especially the road users.

Road accident losses, in a long term total sense, can be due to deficiencies or errors in one or more of the accident components within each crash phase. Based on this framework, the following section examines the causes of road accident losses as a guide to the potential of particular countermeasures in reducing total losses.

#### 1.4 CAUSES OF ROAD ACCIDENT LOSSES

In this section a "cause" is defined as a deficiency but for which an accident would not have occurred or its consequences would not have been as severe. Accidents typically have multiple causes.

The causes of traffic accidents were determined carefully and objectively in Indiana, USA by a study in which 2,258 accidents were investigated by technicians and 420 accidents were

investigated in greater detail by a multi-disciplinary team of professionals (Treat 1977). Factors were judged as being definitely or probably causal and the following groups of factors were found:

. Human factors alone	57%
. Vehicle factors alone	2%
. Environmental factors alone	3%
. Human and vehicle factors	6%
. Human and environmental factors	26%
. Vehicle and environmental factors	1%
. All three factors	3%

(These percentages do not add to 100% due to rounding).

In summary, road user factors were identified as the cause of 93% of accidents or their severity. Environmental factors were cited as the cause in 34% of accidents, and vehicle factors in 13%. These percentages add to more than 100% because of multiple causes.

It should be pointed out that the countermeasure for a particular type of cause does not necessarily lie in the same area as the cause. In 1976 it was suggested that about 60% of road injury accidents could be avoided using proven remedies and measures; of this reduction, 15% would come from measures applied to the road, 20% from measures applied to the vehicle and 25% from measures applied to the driver (Sabey 1976).

### 1.5 TYPES OF COUNTERMEASURES

In assessing new countermeasures proposed in submissions to the Inquiry, it was found useful to classify them into identifiable groups before embarking on the assessments. A special form was created for this purpose (see Annex).

In many cases, individual proposals were variations or parts of a more general countermeasure concept. These were grouped under a generic title for the purpose of initial assessment. However, this grouping did not prevent an individual proposal from being assessed as cost-beneficial if other variations in the same group were not.

Proposals were then classified by the specific components of the road accident problem which they aim to change. Specific targets for countermeasures were usually sub-components of the general components described in Section 1.3, ie, road users, vehicles, road environment, and social environment.

Proposals were likewise classified by the crash phase in which they aim to intervene. Countermeasures suggested usually aimed to prevent or reduce one or more of the following direct contributors to road accident losses:

- . Exposure
- . Energy build-up
- . Accident involvement
- . Injury/damage (following accident involvement)
- . Death/disability (following injury occurrence).

To assist in the assessments, it was found useful to classify countermeasure proposals also by the indirect target effects they aim to achieve, such as changes in road user knowledge, attitudes, skills or behaviour. Further, some proposals had indirect aims to provide certain physical resources in the vehicular, road and general environments, such as helmets and first aid kits.

Proposals were also classified by whether they were legislative-based or not, and by their implementation period. Legislative countermeasures were those proposals considered to require new legislation (and its enforcement) to be implemented. The implementation period was assessed as the minimum period for full implementation of the proposal, and classified as short term (0-1 year), medium term (2-5 years), or long term (over 5 years).

Finally, proposals were classified by the intervention strategy on which they appeared to be based (though in many cases this was not obvious). Proscriptive measures were those proscribing an unsafe situation, usually by legislation, but also by public education of definitive research in some instances. Preventive measures aimed at preventing unsafe situations, previously proscribed. Rehabilitative measures and incapacitative measures were all aimed at identified high risk road users (usually defined by accident involvement or by apprehension for traffic offences). However, the former type of measures aimed at treating these road users so that they may continue using the roads, whereas the latter type of measures aimed at permanently or temporarily incapacitating the road user (eg, licence withdrawal).

#### 1.6 BENEFITS OF COUNTERMEASURES

As a preliminary step in the assessment of the accident reduction benefits of a proposed countermeasure, information was sought on the scope of the proposal in the following terms:

- . The link between road trauma risk and the target situation (behaviour or resource deficiency) addressed by the proposed countermeasure, and
- . The proportion of total road trauma involving the target situation.

Many proposed countermeasures did not satisfy this initial assessment. Either there was evidence of no link between the target situation and an increased risk of road trauma, or the target situation was present in a very small proportion of road trauma cases.

The next step was to seek evidence of the effectiveness of the proposed countermeasure. The evidence may have been expressed in terms of direct criteria, such as exposure or

accident involvement, or in terms of indirect criteria as surrogates for road trauma, such as specific road user behaviours (eg, drink-driving).

Depending on the nature of this evidence, proposed countermeasures were assessed as being "proven", "likely", or "implicit" :

- . **Proven countermeasures** are those for which there is scientifically acceptable evidence, relevant to the Australian road traffic environment (but not necessarily produced in Australia), linking the countermeasure and a reduction in road trauma or an acceptable surrogate for road trauma. An acceptable surrogate is one for which there is clear research evidence of a link with road trauma (eg, blood alcohol level).
- . **Likely countermeasures** are those proposals considered likely to be effective because either;
  - (a) there is suggestive, but not scientifically acceptable, evidence linking the countermeasure and a reduction in road trauma or a surrogate, or
  - (b) the countermeasure aims to eliminate or reduce a road user behaviour for which there is clear research evidence of a link with road trauma. (In this latter case, the countermeasure would be in question only because of the known difficulties in changing human behaviour).
- . **Implicit countermeasures** are those measures which are neither proven effective, nor is there evidence that they are "likely" to be effective (as defined above), but in the professional opinion of the consultants, are based on sound principles which suggest that the measures will reduce road trauma.

In many cases, evidence of effectiveness was obtained from another State or country where a similar countermeasure had been implemented. Even in these cases, the evidence was sometimes far from conclusive. Evaluating the effectiveness of an implemented countermeasure is usually a difficult task because of;

- (a) other changes to the road system at or about the same time
- (b) the absence of a "comparison group" of road users, vehicles or locations, because most countermeasures are applied to the whole road system, and
- (c) the absence of reliable data on the effects of the countermeasure, especially the intermediate and indirect effects.

The value of an effective countermeasure is related to the costs of the accidents it will save - an intangible quantity. The accident savings value can be approximated by the historical costs of accidents of the same type and severity, or it can reflect the value which society is "willing to pay" to save accidents. It has been estimated that society is willing to pay 2 or 3 times the historical accident costs (in real terms) to prevent future accidents (RACV 1983, Lay 1983).

The historical costs of accidents in Australia during 1978 have been determined in 1978 prices (Atkins 1981). Average accident costs were updated to 1983 prices by an index of average weekly earnings (ABS 1983), since labour costs were the largest component of total accident costs. Average costs in 1978 and 1983 prices were as follows:

	1978 prices (Atkins 1981)	1983 prices (estimated)
	-----	-----
. Fatal accidents	\$178,090	\$301,785
. Major injury accidents	39,800	67,445
. Minor injury accidents	4,580	7,760
-----		
. All casualty accidents	14,285	24,205
. Property damage only accidents	1,180	2,000

The average accident costs in 1983 prices, for appropriate levels of accident severity, were used to estimate the expected benefits of proposed countermeasures which had been previously assessed as effective.

#### 1.7 COSTS OF COUNTERMEASURES

The costs of a proposed countermeasure were divided into those falling on the public (Government) sector and those on the private sector. Public sector costs included those associated with implementation and on-going operation of the countermeasure, and perhaps costs of public education about the new programme. Private sector costs included some or all of the implementation or operational costs (depending on whether a cost-recovery approach is feasible), cost of lost mobility from restrictive measures, and intangible costs such as loss of pleasure in driving and philosophical objections to regulation.

Perhaps the most substantial cost frequently ignored in the assessment of road trauma countermeasures is the cost of lost mobility from a restrictive measure. This may reflect difficulties in determining the value of this cost, in contrast with the recent improvements in the data for determining the value of accident reduction benefits (Atkins 1981, Somerville and McLean 1981).

It may also reflect a more commonly held view of late, that road trauma is a public health problem and should be attacked with public health methods (Haight 1983a). This perspective considers the road transport system as the "agent" of the "disease" of road accidents. If the social and economic value of the road transport system is acknowledged at all in the public health perspective, it is considered to be relatively insignificant beside the cost of road accidents (RACV 1983).

Nevertheless, mobility by road transport does have a substantial value and the cost of lost mobility was sought for inclusion among the costs of restrictive countermeasures. Unfortunately, there was a limited amount of data on which this procedure could be based.

Two references have indicated that road accident costs represent between 5% and 10% of the value of road transport (Thorpe 1967, Haight 1983b); road accidents cost at least \$500 million per annum in Victoria (RoSTA 1983a). However microscopic data, related to the value of individual elements of road mobility which were the subject of proposed restrictive measures, were not available. The most appropriate data that could be found related to the value of travel time savings for various trip purposes (BTE 1982).

In the absence of quantitative data to estimate the value of the cost of lost mobility from proposed restrictive measures, it was possible to describe such costs only in qualitative terms in the assessment of countermeasures, where the costs appeared to be substantial.

## 1.8 COST-BENEFITS OF COUNTERMEASURES

Following assessment of the benefits and costs of a proposed new countermeasure, a judgement was made regarding whether it would be cost-beneficial if introduced.

In discussion with the Social Development Committee, it was decided that for a proposal to be acceptable as an endorsed road trauma countermeasure, its road safety benefits alone should exceed its cost. For this reason, the non-road safety benefits of proposals were not assessed, except in qualitative form. In a few cases, these benefits appeared to be substantial and were noted accordingly.

In a similar way, the non-quantifiable costs were not included in the assessment of cost-benefits, but were noted if they appeared to be substantial.

Based on the assessment of the road safety benefits and the quantifiable costs, each countermeasure proposal was classified as follows:

- . Not cost-beneficial,
- . Cost-beneficial (estimated benefit/cost ratio greater than one),
- . Highly cost-beneficial (estimated benefit/cost ratio greater than 10).

The cost-benefit of each proposed measure for which there was evidence that it is "proven" or "likely" to be effective in reducing road trauma, was assessed in this formal way. The cost-benefit of an "implicit" countermeasure was usually assessed in a less formal manner, based on the professional opinion of the consultants.

All non-trivial countermeasure proposals submitted to the Inquiry were assessed in the manner described in Sections 1.5, 1.6, 1.7 and this section. Proposals were classified by the following broad types of countermeasure programmes as a basis for a systematic presentation of the assessments (Chapters 2 to 15):

- . Pre-Licence Education
- . Licensing Programmes
- . Post-Licence Legislation and Enforcement
- . Post-Licence Education
- . Post-Licence Re-Education
- . Drink-Driving Countermeasures
- . Speeding Countermeasures
- . Seat Belt Programmes
- . Pedestrian Programmes
- . Bicycling Programmes
- . Motorcycling Programmes
- . Vehicle Programmes
- . Road Environment Programmes
- . Social Environment Programmes

This ordering does not imply any relative importance or effectiveness of the different types of proposals. Where necessary, the types of countermeasures included under each heading will be defined in the preamble to the appropriate chapter.

Chapter 16 presents a summary of those countermeasure proposals which were endorsed as being cost-beneficial. Endorsed countermeasures were categorized by the strength of the evidence

supporting their likely effects ("proven", "likely" or "implicit"), the length of the implementation period, and whether legislative-based.

Proposals which could not be endorsed on the basis of currently available evidence were classified in Chapter 17 by the type of deficiency from which each proposal suffered, as follows:

- . Absence of link between road trauma and the countermeasure target,
- . Trivial contribution to total road trauma losses,
- . Absence of evidence of effectiveness, or
- . Road safety benefits less than cost.

Some proposals submitted to the Inquiry were not new countermeasures in concept, but represented suggested improvements to existing countermeasure systems with the aim of increasing their effectiveness or reducing their cost. Some suggestions also addressed institutional problems which appeared to inhibit the introduction of new countermeasures.

These suggested improvements were reviewed and their cost-benefits assessed, based on the professional opinion of the consultants. Cost-beneficial improvements of the operational type were usually included among the endorsed countermeasure proposals, whereas institutional improvements have been discussed separately in Chapter 18.

Submissions to the Inquiry also included a number of suggestions for research which should be undertaken, and during the assessment of proposed countermeasures the consultants identified a number of research needs. Research needed to obtain more knowledge of accidents, or to assess the value of present or proposed accident countermeasures, is listed in Chapter 19.

## 2. PRE-LICENCE EDUCATION

The pre-licence education of the individual may be thought of as commencing at pre-school age and continuing through until that individual obtains a licence to drive a motor vehicle. Thus, the pre-licence phase of road user education spans some 17-18 years and covers passenger, pedestrian and cycling education.

Specifically, pre-licence education is that part of overall education concerned with the development of the individual's capacity to interact safely and responsibly with the traffic system prior to his/her taking up licensed vehicle operation.

It is important to distinguish between training and education, particularly in the road safety context. Training usually refers to instruction and practice in specific skills, usually under supervision, while education embraces a wider range of activities which, while incorporating aspects of skill acquisition, centre on the development of attitudes and knowledge via various approaches to teaching and learning.

Of the two terms, education is the broader. Unlike training which is usually short-term, task-oriented and highly specific, education is concerned with the preparation of individuals, over time, to live within a particular social system. In many respects, training could be considered to be a highly specific component of the longer-term educational process.

### 2.1 PRE-SCHOOL PEDESTRIAN SAFETY PROGRAMS

Both the RACV and Victoria Police proposed road safety training or education for children of pre-school age.

The Police held that general road safety should be a compulsory component of the kindergarten curriculum, while the RACV advocated the adoption of pedestrian education programs

based on children's traffic clubs for pre-school children and their parents.

Though the two proposals differ in content and orientation, they have a common aim, namely to reduce the road accident involvement of pre-school children by educational strategies which improve the on-road skills, behaviour and/or knowledge of the pre-schooler and his parents.

Casualty statistics show that, in Australia, approximately 700 children aged 6 years or less die from accidental causes each year, about 400 of these resulting from road-related accidents and the remainder from domestic accidents (Grieve 1983). Therefore, road-related accidents account for the majority (approximately 57%) of fatalities due to accident in this age group.

Research in Australia and overseas has shown that though the accident rate of pre-schoolers, ie, those age below 6 years, is apparently lower than that for other age groups (namely 5 to 16 year old, 17 to 20 year old, and 60 years and above), when exposure to the road system is taken into account, the accident risk of the 3 to 7 year old child is surpassed only by that of 8 to 12 year old children (Jonah and Engel 1983).

European and Scandinavian experience has shown that the establishment and operation of children's traffic clubs, which encourage parents both to model appropriate behaviour in traffic and to teach road safety skills and knowledge to the pre-school children, to be effective from the both the road safety and educational point of view (Rothengatter 1981; Schioldberg 1976, 1980).

In Scandinavian countries children are enrolled in traffic clubs at age 3 by their parents. From age 3 through to 7 (primary schooling commences at age 7 in this region) the child and parents receive a pack of teaching-learning materials every six months. Each pack contains booklets and other publications with activities for the children to work out with their parents.

Some advice and guidance on child development is also supplied for the parents. Materials are graded to present parents with a controlled and continuous road safety education programme for the duration of the child's membership of the club.

Programmes of a similar nature are also operating in the USA under the auspices of the National Safety Council and the American Automobile Association.

Programmes based on traffic club principles have been well accepted in Europe, Scandinavia and North America. Many have been sponsored by Government or private bodies (Embry et al 1982; Downing et al 1981).

Evaluations of the Norwegian Traffic Club showed a 20% lower casualty rate for members relative to non-members over the whole country (Schioldberg 1976, 1980). Behavioural assessments of similar programs operating in the West Germany and USA showed significant improvements in the on-road behaviour of trainees relative to controls (Limbourg and Gerber 1979; Embry et al 1981).

Though children's traffic clubs operating in Europe, Scandinavia and the United States usually attract some government/private sector sponsorship, parents generally pay a fee of between A\$15 and A\$45 for a two to four year course.

Local estimates put the cost of establishing and administering an Australia-wide children's traffic club, encompassing some 60% of all 3 to 6 year old children, at approximately \$3 million per annum (Grieve 1983). Though parents would pay approximately \$3 per annum for membership to help defray costs, it is envisaged that government, both State and Federal, and private sector sponsors would bear the major costs.

Based on a 20% reduction in losses due to road-related fatalities (ie, approximately 80 per annum) in the under 6 year old age bracket, a children's traffic club would save

approximately \$24 million per annum, on a national basis, at a cost of approximately \$3 million per annum. If casualty accidents are added to fatality figures, the saving could run to approximately \$271 million per annum for the same implementation and administration costs. Thus, the programme would appear to be highly cost-beneficial.

A children's traffic club programme could be fully operational on a state-wide or national basis within the medium term. It would not require new legislation to implement.

## 2.2 EDUCATION/TRAINING FOR BICYCLISTS IN SCHOOLS

A number of submissions proposed bicycle education and training as a component of traffic safety education in schools, and the Royal Australian Nursing Federation (Victorian Branch) recommended such training be made compulsory in schools as an independent programme.

The Bicycle Institute of Victoria recommended that school-based bicycle safety programmes for 6-8 year olds and 14-16 year olds be developed to complement the existing "Bike-Ed" programme aimed at 9-13 year old students.

Bicycle education and training in schools would aim to reduce bicycle accidents by improving the on-road cycling behaviour and associated knowledge and skills of school-aged children.

Children of school age, particularly in the 9 to 13 year old age bracket, are over-represented in bicycle accidents. Children of school age account for some 26% of all reported bicycle accidents in Victoria (Newlands 1980, Geelong Bike Plan 1980a). The involvement of children in bicycle accidents may actually be higher as, based on research conducted by the Geelong Bike Plan administration, the ratio of reported to unreported bicycle accidents (including those involving casualties) is about 1 to 30

(Geelong Bike Plan, 1980a). A similar situation seems to prevail in New South Wales (Trotter and Kearns 1983).

Studies in Victoria and New South Wales concluded that the high involvement of children in bicycle accidents was probably due to their limited understanding of the road environment, ignorance of their risk of accident and limited knowledge (or motivation) regarding how to behave safely when on a bicycle on road (Geelong Bike Plan 1980a; Trotter and Kearns 1983). All of these aspects are amenable to educational-behavioural countermeasures.

The Bike-Ed program which has operated in Victoria since 1979, and is now taught in some 45% of Victorian primary schools, has been shown to positively influence the on road behaviour of children in the 9 to 13 year old age group and to reduce accident involvement.

In 1983 the Traffic Authority of New South Wales evaluated the introduction of the Victorian-developed Bike-Ed programme into schools in the Newcastle area, concluding that the safe riding behaviour, knowledge and skills of trainees were significantly superior to matched controls, confirming the findings of earlier Victorian research (Trotter and Kearns 1983).

An investigation of the effects of a three year programme of Bike-Ed in Geelong, found a small but statistically significant decrease in casualty accidents among 9 to 13 year old cyclists (the target of Bike-Ed) in 1981 relative to pre-Bike-Ed periods (Wood, 1983).

Bike-Ed programmes are conducted by trained teachers from within the school's own establishment though such staff are trained by full-time Bike-Ed consultants (seconded teachers) based at the Road Safety and Traffic Bureau of the Road Traffic Authority (RTA). Training is provided under the auspices of the Education Department's In-Service education program.

Parents or schools are often required to purchase items such as bike flags, reflective vests and/or bicycle helmets (at approximately \$25 to \$45 per unit) to enable children to participate in the Bike-Ed programme. However, some schools have bulk purchased helmets for group use, at a considerable saving, or have had group-lots of helmets donated by local service clubs.

Evaluation of the Bike-Ed programmes effectiveness in Geelong showed that the programme probably prevented approximately 10 accidents during the 1980/82 period (4 major injury and 6 minor injury accidents) which represented a net saving of approximately \$98,000 at a total cost of approximately \$52,000 for the administration/conduct of the Geelong component of Bike-Ed (RTA 1983c). Thus, bicycle education, in the form of the Bike-Ed programme, is likely to be cost-beneficial as a road accident countermeasure. An accelerated programme to introduce Bike-Ed to all primary schools in Victoria, excluding Class D schools, could be fully implemented in the medium term.

Regarding the need for bicycle safety education for children in the 6-8 year old age bracket, the safety of such young children on bicycles is of concern as some 60 Victorian children were reported as killed or injured in bicycle accidents during 1980 (Geelong Bike Plan 1980a, 1982).

While a school-based bicycle safety programme akin to Bike-Ed, or modelled on European/Scandinavian varieties (BIV 1983), could be developed to address this problem, it may be more prudent to give priority to the introduction of Bike-Ed into all Victorian primary schools (excluding Class D) before considering a programme for younger children.

Research into the development of a junior bicycle safety programme for children under 9 years of age should be conducted to determine the likely effectiveness and feasibility of introducing such a programme into Victorian schools.

The BIV also recommended the introduction of an advanced on-road programme for cyclists of age 14-16 called "The Effective Cycling Course", which was developed in the USA by Forester circa 1979 (BIV 1983).

This advanced programme may have merit in the broader cycling education context. However, its introduction into Victorian schools may not be justified when the existing Bike-Ed programme, if introduced into all Victorian primary schools, would provide adequate basic bicycle safety education for children in the highest bicycle accident involvement group.

If children receive adequate bicycle safety education prior to age 14, there would not be a need for a more advanced, school-based programme, on safety grounds.

In the absence of evidence of additional safety benefits from an advanced bicycle education programme, over and above that which would be provided by Bike-Ed, it is not possible at this time to endorse the proposed advanced programme as being cost-beneficial.

### 2.3 INTEGRATED/SEQUENTIAL TRAFFIC SAFETY EDUCATION PROGRAMMES IN SCHOOLS

A number of submissions proposed that traffic safety education in some form be integrated into schools, from preparatory level through to Year 12. Though individual submissions differed, a common theme was that traffic safety education, to be effective, must start early and feature in both primary and secondary school curricula and cover pedestrian, cyclist, passenger and driver safety.

Such programs aim via educational means to reduce the road accident involvement (or risk) of children and to build responsible attitudes towards all types of road use.

It has been acknowledged elsewhere in this report that child pedestrians, child cyclists and novice drivers (or motorcyclists) are over involved in road accidents in Victoria.

Given that the minimum duration of formal compulsory education in Victoria is some ten years, it would take at least ten years to longitudinally evaluate the behavioural and road safety effects of an integrated, sequential program of traffic safety education in schools. However, this type of program would seem to have some merit as an efficient means of imparting traffic safety education as:

1. All children are legally required to attend school between the ages of 6 and 15 years and are, therefore, a "captive" group;
2. Concepts regarding safe/appropriate interaction with the traffic system can be introduced gradually and sequentially over time and can be designed to parallel the cognitive development of children (therefore maximising the probability that safe road user behaviours and attitudes will be developed and maintained in children);
3. Road user education can be readily integrated into the curriculum, particularly in primary schools (eg., as evidenced by the "Bike Ed" Programme which is in use in Victorian schools);
4. Instruction can be given by trained teachers/educationalists skilled in educational techniques and who are aware of children's developmental limitations;
5. Teachers can be guided by curriculum materials produced by road safety authorities, road safety educators and curriculum development groups within the education system.

There is evidence to suggest that school-based pedestrian safety and bicycle safety programs are successful in developing and maintaining safe on-road behaviour in children. However, school-based traffic safety education generally can claim to be only a potential road accident countermeasure rather than one of the proven variety (Trotter and Kearns 1983, Jolly 1977, Roberts 1980, Rothengatter 1981, Singh 1976, Van der Molen and Rothengatter 1980).

Further research on a local level is necessary to establish conclusively the value of this approach in regard to the Victorian situation. This research should focus on the collective value of the existing system of traffic safety education programmes in Victorian schools (SDC 1983).

#### 2.4 PRE-DRIVER EDUCATION/TRAINING IN SCHOOLS

An expanded programme of pre-driver education in schools was advocated in a number of submissions. While some proposed that such programmes should be compulsory, others favoured voluntary participation. The Goulburn Valley Driver Training Complex suggested that pre-driver education programmes should include practical training using off-road areas, while other submissions recorded no preference.

All proposals implied that accident involvement, and consequent casualties and fatalities, can be reduced by educational means which seek to improve the novice or potential driver's knowledge of safe driving principles and to develop a positive and safe approach to road use.

Novice drivers have a disproportionately high casualty accident rate, with that of first year drivers being more than four times the rate of drivers with at least three years of driving experience (Deutsch et al 1981). Learner permit and probationary licence holders represented 23% of drivers involved in casualty accidents in Victoria in 1980 (RoSTA 1981a).

Safe driving knowledge is a prerequisite to safe driving behaviour (McKnight and Green 1977). Unsafe driving behaviours are probable causes of over 90% of accidents (Treat 1977).

While pre-driver education programs have been operating for many years in both the United States and Victoria (Pre-driver Education commenced in Victorian schools in 1966) and are educationally sound, evidence in support of school-based pre-driver education is not promising. Research evidence from the United States and United Kingdom suggests that not only is pre-driver education (in high schools) ineffective in reducing accident risk per licensed driver, it increases the accident exposure of young people by encouraging them to become licensed drivers at an earlier age than untrained peers (Robertson and Zador 1978, Shaoul 1975).

Preliminary results from a detailed study in DeKalb County (Georgia, USA) showed no significant overall differences in accident frequency between those who received high school driver education and those who did not, though some of those who received training did show improvement in specific areas (Weaver 1980, 1983). For example, the post-course incidence of drink-driving and traffic violations among trainees was significantly lower than those of matched untrained drivers (Weaver 1983, O'Farrell 1983, Smith 1983b).

In regard to training in off-road areas, research conducted by RoSTA during 1977-81 found that, though male learner drivers trained off-road at the Goulburn Valley Driver Training Complex scored higher on driver attitude and knowledge tests, their practical driving performance did not differ significantly from that of a matched group trained on-road (Strang et al 1982). The study also found no significant difference between the accident/traffic violation records of those trained on or off-road. Though the study suffered some methodological deficits, its results suggest that off-road driving training/education for novice/learner drivers is not cost-beneficial.

Given that the area of driver education/pre-driver education in schools is a controversial topic both within Australia and overseas, there is a need for further research into this matter to establish with a greater degree of certainty the effectiveness of pre-driver education as a road accident countermeasure.

## 2.5 PRE-LICENCE EDUCATION OUTSIDE SCHOOL SYSTEM

A number of submissions proposed improvements to pre-licence education during the phase just before licensing and after the potential driver/rider has left school. The RTA proposed that the current revision of the learner permit educational materials and tests should continue and should embrace further roadcraft education and tests as part of probationary licensing. Roadcraft lectures and tests prior to licensing were also proposed, and a particular need for education on country driving roadcraft for city residents was seen.

These proposals are clearly directed at the accident involvement of novice drivers and aim to increase his knowledge of safe driving principles.

An evaluation of a novice driver roadcraft manual and corresponding roadcraft tests at licensing in Virginia, USA found that there was a 33% increase in safe driving knowledge and that most of this increased knowledge was still retained after 5 months (McKnight and Green 1977). A follow-up study of the licensed drivers found that their rate of involvement in accidents resulting in injury or property damage was reduced by 19% over their first two years of driving (McKnight and Edwards 1982).

Some 3,060 drivers and motorcyclists were involved in casualty accidents during their first two years of licensing in Victoria during 1980 (RoSTA 1981a). Based on the American findings, it is estimated that a programme of novice driver roadcraft manuals and tests at licensing would produce a saving

to the Victorian community of \$14 million per annum. If a cost-recovery approach is used for the provision of a driver manual for each learner driver, it is estimated that the above saving would be discounted by about \$150,000 per annum, based on a selling price of \$1.00.

A roadcraft manual for novice motorcyclists has recently been developed and released, and a novice driver manual is currently under development. It is estimated that the total cost to the Government for manual development will be \$100,000.

Based on a net benefit of over \$13.8 million per annum and an implementation cost of \$100,000, it is apparent that a programme of novice driver roadcraft manuals and tests at licensing would be a highly cost-beneficial countermeasure. The programme could be fully operational in the medium term and does not appear to require new legislation as its basis.

### 3. LICENSING PROGRAMMES

Licensing programmes were taken as embracing the training and testing of certain motor vehicle operating skills and knowledge, required as a condition for obtaining the appropriate licence or learner permit. Proposed programmes related to the obtaining of motorcycle, car and heavy vehicle licences or endorsements.

#### 3.1 UPGRADED MOTORCYCLE LICENCE TRAINING AND TESTING

The RTA and the RACS proposed that the existing programme of motorcycle rider training and skills testing for learner permit should be extended to cover new riders from all parts of Victoria (only the central part is currently covered). The RTA also proposed that an additional programme of training and testing should be introduced as part of obtaining a motorcycle probationary licence. It is understood that together these training components will resemble the United States Motorcycle Safety Foundation's new motorcyclist training programme, and that the second test will be similar to the Motorcycle Operator Skill Test used in California.

These programmes are clearly directed at the accident involvement of learner and novice motorcyclists and appear to aim to reduce their involvement by improving riding skills. The programmes may also reduce accident involvement by a reduction in the number of new motorcyclists, since some learner permit and licence applicants may be discouraged from motorcycling by and during the training and testing.

There appears to be substantial agreement that operating skills are particularly relevant to the accident involvement of motorcyclists, much more so than for car drivers (HRSCRS 1982). It has been estimated that riding skill deficiencies are relevant in 25-35% of motorcycle crash involvements (McLean et al 1979).

A study of the Californian training and testing programme for motorcycle licensing indicated a 15-21% reduction in accident involvement in the one year period following licence application (Anderson et al 1980). The primary basis for the accident reduction appeared to be a decrease in the number of motorcyclists eventually licensed. Whether one can generalise this effect to the Australian scene has been questioned (Saffron 1981); 75% of Californian motorcycle licence applicants already held a car driver's licence and this high figure was thought to be an element in the ease with which they were discouraged from motorcycling. However, an RTA survey of 515 Victorian learner motorcyclists in 1983 found that the percentage already holding a car licence was a similar 75% (Shea 1983).

It appears likely that a 15-21% reduction in accidents involving novice motorcyclists will result when the Victorian training and testing programme is extended to cover probationary licensing; the benefits of the current programme applying to learner permit issue are unclear.

Based on 666 learner permit and first year motorcyclists involved in casualty accidents in Victoria during 1980, the benefits of an upgraded programme of motorcycle licence training and testing, resembling that in California, would be approximately \$2.5-3.4 million per annum. The disbenefits to novice motorcyclists include the charges for training and testing (which vary substantially depending on the training option chosen) and the cost of purchase of the novice motorcyclists manual, "Victorian Rider". These costs are estimated as \$0.7-1.3 million per annum, and hence the net benefits could range from \$1.2 million to \$2.7 million per annum.

Implementation costs to develop the training courses and set up training centres throughout Victoria have been estimated as \$1.3 million. A public information campaign at a cost of \$0.1 million appears necessary to inform the Victorian community about the training courses and testing requirements.

Based on net benefits of \$1.2-2.7 million per annum and an implementation cost of \$1.4 million, it appears that an upgraded programme of motorcycle licence training and testing would recover its set-up costs in little more than one year and is likely to be cost-beneficial. However, an unquantified cost which could not be considered is the value of lost mobility to those persons who may be deterred from motorcycling by the upgraded programme and who could not afford to own a car instead.

The programme could be fully operational in the medium term and does not appear to require new legislation as its basis.

### 3.2 UPGRADED DRIVER LICENCE TRAINING AND TESTING

A number of submissions proposed upgrades of the current systems of car driver training and testing of driving skills as part of licensing. These proposals included formal training and grading of driving instructors, and Government regulation of driving schools to ensure consistent standards. Also proposed were additional off-road driver training complexes, presumably as venues for the further development of driving skills among learner drivers.

These proposals are directed at the accident involvement of novice drivers and aim to reduce their involvement by increasing their car operating skills before obtaining a licence.

Unfortunately, various road safety authorities have been unable to find evidence of a link between car driving skills and road trauma (AAA 1981, HRSCRS 1982). Driving skill deficiencies have been found relevant in less than 5% of crash involvements (Treat 1977, McLean et al 1979).

In addition, a recent review of evaluation studies found no indications that special pre-licence driver training programmes reduced the crashes of novice drivers (Saffron 1981).

On the subject of off-road driver training complexes, a recently completed evaluation based on the Goulburn Valley Driver Training Complex in Victoria is directly relevant (Strang et al 1982). This study of learner drivers found no evidence of driving skill benefits in addition to those obtained from driver training on normal roads. This result has been confirmed elsewhere (Sheppard 1979). Furthermore, there was no evidence that those trained off-road had fewer self-reported accidents or traffic convictions than those trained on-road (Strang et al 1982).

In the absence of evidence that any special programmes of pre-licence driver training and licence testing of driving skills are effective road trauma countermeasures, it is not possible to endorse upgraded driver licence training and testing as cost-beneficial at this time.

### 3.3 EXTENSION OF GRADUATED MOTORCYCLE LICENCE SCHEME

Currently in Victoria, learner and first year probationary motorcyclists are restricted to riding motorcycles with engine capacities of less than 260 cc. They are also restricted to a maximum speed limit of 80 km/h and are not allowed to carry pillion passengers. These restrictions are lifted at the end of the first year of probationary licensing.

In their submission the RTA suggested that the initial benefits of the engine capacity restriction may be eroded by the introduction of high performance motorcycles in the 250 cc range. Thus it may be necessary to extend the current system by rephrasing the limit on motorcycle performance. In contrast, the Motorcycle Riders Association (MRA) proposed that the engine capacity limit should be replaced with a system of graded skill testing at various stages of probationary licensing.

The first of these proposals aims to reduce the accidents of learner and novice motorcyclists by further restricting a high risk behaviour pattern (inexperienced riders on high performance motorcycles) and, perhaps indirectly, by limiting their exposure (small capacity motorcycles may be unsuitable for long distance travel). The second proposal aims to provide incentives for the staged development of operating skills of novice motorcyclists.

There is little doubt that motorcycling is a high risk mode of travel, with the motorcyclist casualty rate per kilometre travelled being 12-31 times that of car occupants (Johnston et al 1976, Goodwin and Hutchinson 1977, Haddon and Baker 1980, Broeg 1981, Swann 1982a). Learner permit holders contributed 24% and probationary licence holders contributed 10% of motorcyclist casualties in Victoria during 1980. A study has clearly illustrated the disproportionately high risk to novice riders of motorcycles with large engine capacities (Johnston et al 1976).

The introduction in 1979 of the engine capacity limit for learner and first year riders resulted in substantial reduction in road trauma to these groups. During the two year period after the new scheme was fully implemented, the casualty accident rate of learner motorcyclists was reduced by 30% and the rate for first year riders was reduced by 29% (King et al 1982). The share of new motorcycle sales represented by those with engine capacity less than 260 cc increased from around 50% to a new level around 70% during the same period.

In contrast, no system of graded skill testing like that proposed by the MRA is known to have been evaluated.

Based on the substantial benefits achieved during the first two years of full implementation of the existing graduated licence scheme, it appears that an extension to the scheme to retain the operational intent of restricting use of high performance motorcycles would guarantee that similar benefits continue to be achieved in the future. The existing scheme is based on legislation, as would be its extension, and appears to

require minimal enforcement. Hence the extended scheme is likely to be highly cost-beneficial, and the extension itself is likely to be a cost-beneficial operational improvement. Revisions to current legislation to extend it to restricting use of high performance motorcycles could be implemented in the short term.

An unquantified cost which could not be considered is the value of long distance travel to novice motorcyclists, since they may not be able to undertake such journeys on low performance motorcycles.

### 3.4 GRADUATED LICENSING FOR CAR DRIVERS

A large number of submissions proposed various specific restrictions on the driving of novice drivers, usually aimed at perceived high risk behaviours associated with this group. Restrictions on driving at night, after consuming alcohol, with more than one passenger, and in high-powered cars, were proposed.

Implicit in these proposals is the concept of a structured and gradual entry of new drivers into the driving population. The RACV proposed a graduated licensing system with this objective, and during the Inquiry the Federal Minister of Transport released details of his Office of Road Safety's proposal for such a system. In general terms these proposals envisaged a number of stages of learner/novice driving, starting with numerous restrictions (including a ban on driving without adult supervision) and gradually relaxing these restrictions over the initial years. Traffic convictions or accident involvements would have the effect of extending the current stage or returning to an earlier stage.

Coupled with these proposals were suggestions that the minimum age of solo, but restricted, driving could be set lower than the current minimum licensing age of 18 in Victoria. In theory this is a somewhat independent question from the concept of graduated licensing, but may relate to its public

acceptability. Further restrictions on the driving of 18 and perhaps 19 year olds may be unacceptable to the young, but if 17 year olds were to be allowed some solo driving rights, albeit heavily restricted, this may result in graduated licensing achieving a high degree of acceptance. It may also aid the acceptance of the restrictions through many years of the solo driving stages.

While apparently complex, clearly these proposals are directed at the accidents of novice drivers and aim to reduce their accidents by banning specific forms of high risk exposure while the drivers gain on-road experience in controlled ways.

Young novice drivers and their passengers have disproportionately high risk of road trauma when travelling at night (Robertson 1981), when in company with persons of similar age (IIHS 1981), when the driver has a positive blood alcohol level (Mayhew 1983), and when travelling in relatively high-powered cars (Foldvary 1978, CCRAM, 1978, Goek and Heisler 1980). Learner permit holders and probationary licensed drivers represented 23% of drivers involved in casualty accidents in Victoria during 1980.

Only the effects of night driving restrictions on novice drivers have been satisfactorily evaluated, but illustrate the substantial benefits which restrictions can have. Twelve of the United States have so-called "curfew laws" and a study examined the effects on 16 year old drivers in the States of Louisiana, Maryland, New York and Pennsylvania. Crash involvements were reduced by 25%, 40%, 62% and 69%, respectively, during the curfew hours in these States (Preusser et al 1982).

In Maryland the curfew is part of a relatively simple system of graduated licensing applicable to 16 and 17 year olds in which they must have an adult in the car to drive during 1 am to 6 am, and they must remain traffic violation free for 6 months to obtain a full licence (Smith 1983a). Previously, only completion of a pre-driver education course was required to apply for a full

licence at 16 or 17. Nevertheless, the new system resulted in an 18% reduction in the overall accident rate of 16 year old drivers during the first two years it was in effect (Preusser et al 1982).

Regarding the appropriate minimum age for solo driving (albeit restricted driving under the proposed system), there is very little relevant information. A study compared the casualty accident rates per kilometre driven by minimum age drivers in South Australia (16 years) and Queensland (17 years) with that for 18 year olds in Victoria. The interstate rates were 43% and 57%, respectively, lower than that in Victoria (Carter 1980). This may, of course, reflect that drivers aged under 18 years in States other than Victoria are already subjected to various types of (parental) restrictions on their driving. The same study showed that accident rates at ages subsequent to the minimum age in each State were substantially lower than the first year and rapidly approaching the rate for mature drivers.

While the evidence is somewhat tenuous and incomplete, it does suggest that a system of graduated licensing for car drivers in Victoria is likely to have substantial benefits in reducing road trauma for novice drivers. The specific restrictions and the timing of their relaxation should be the subject of further research, but the Office of Road Safety has provided useful suggestions in this regard. The system would require new legislation as its basis and could be implemented in the short term. While the costs of enforcement of the restrictions would be substantial, the likely benefits are also substantial and it is likely the system would be cost-beneficial.

If the system were to be structured so that 17 year olds are allowed some solo driving rights, there would be an additional unquantified benefit in terms of increased personal mobility for this age group.

### 3.5 HEAVY VEHICLE DRIVER TRAINING & LICENSING

A number of submissions put forward the need for improved training programs and/or more stringent licensing procedures for the drivers of heavy vehicles. The RTA proposed that this area required research prior to the formulation of recommendations regarding change or improvement.

Proposals to improve or revise heavy vehicle driver training or licensing are directed towards a reduction of accidents and collisions involving heavy vehicles, by specific driver education, training or certification.

Heavy vehicles though not over-represented in accidents or collisions overall, are over-represented in accidents involving fatalities, particularly where a heavy vehicle collides with a passenger car (Eicher et al 1982). As noted elsewhere in this report, unsafe driving behaviours is a probable causative component in some 90% of road accident (Treat 1977).

Studies in Victoria, and elsewhere in Australia, which have investigated the links between specialised driver training for heavy vehicle operators (e.g; Defensive/Safe Driving Courses) have generally found little direct evidence to suggest that training of this kind reduces the accident involvement of those so trained (Wood 1978, Sandow 1979, Manders et al 1982). However, much subjective and anecdotal evidence exists to suggest that post-licence heavy vehicle driver training, conducted within transport fleets, reduces loss rates or accident involvement among trained drivers (Taylor 1982, Murcott 1981, Watt 1982, Goulburn Valley Driver Training Complex 1983). The bulk of this evidence is based on testimonials or on single-factor assessments of the effect of training (Sandow 1979). For example, there is one instance where it was claimed that heavy vehicle driver training considerably reduced accident involvement among trained drivers; the fact that the company in question, during the same period, purchased a new fleet of safer, more efficient vehicles was overlooked (Watt 1981).

In regard to upgraded licensing requirements, there appears to be no evidence to suggest that such a strategy would act to reduce the accident involvement of heavy vehicles.

Though heavy vehicle driver training programmes, or even more stringent licensing, would be unlikely to be opposed by industry groups, there would seem to little objective evidence to support their efficacy as road trauma countermeasures (Noonan 1982). As a partial consequence of such suggestions, the RTA has recently formed a working party to advise on licensing and training procedures appropriate to heavy commercial vehicle operators (Swann and Pendlebury 1982). The conclusions and recommendations of this working party are not yet available.

However, there is some a suggestion that industry/apprenticeship programmes in heavy vehicle operation may lead to improvements in driver skills, attitudes and driving behaviour where such programmes cover, in addition to driving instruction, broader issues/topics such as loading, tarping, vehicle maintenance and safety (HRSCRS 1982). There would seem to be a need to objectively evaluate the cost-benefits of current or proposed training/licensing "packages" for the operators of heavy vehicles (or other specialised commercial vehicles).

## 4. POST-LICENCE LEGISLATION AND ENFORCEMENT

### 4.1 MODIFICATIONS TO TRAFFIC LAW

In some submissions it was suggested that there is a need for simple, reasonable, understandable, consistent and fewer traffic laws. It was also proposed that there should be uniform traffic laws throughout Australia.

For example, driver behaviour at roundabouts is inconsistent and could be unsafe because motorists do not have a guide as to the path to take through an intersection or the appropriate signals to warn other motorists of their intended path.

It was presumed that the submissions assume that simpler, consistent and fewer traffic laws would make driving easier and, hence, allow greater concentration on the road and immediate driving tasks.

However, there is no known link between the complexity of road law and road trauma and no evaluation of the simplification of traffic law has been undertaken.

It would be appropriate to consider the relationship between knowledge of the law and accident occurrence as part of a long term research programme.

Uniformity of traffic law throughout Australia may be appropriate for the efficient management of traffic, but there is no known accident problem associated with interstate differences.

Two submissions proposed specific changes to traffic law, namely to increase lane discipline, particularly keeping left, and to provide for left turn priority over right turning vehicles at intersections.

With respect to increased lane discipline and "keeping left" on multi-lane roads, it has been proposed that either compulsory compliance with the "Keep Left Unless Overtaking" be introduced or Regulation 501 (revoked in August 1965), which necessitated vehicles keeping as far left as practicable unless overtaking, be reinstated.

Either amendment is directed at reducing the frequency of lane changing. Unfortunately there is no objective measure of safety related to "keeping left" and much of the problem is probably imagined rather than real because of the frustration caused by following slow vehicles in right hand lanes.

It has been suggested that advisory signs have been successful in moving vehicles to the left and reducing the speed range within lanes (ACRUPTC 1981), but the only numerical evidence relates to the use of these signs on freeways in Sydney. Following their introduction in 1974 there was a 7% reduction in median lane traffic in the first year and subsequently between 1975 and 1982 there was a further 2% reduction. In the same period traffic increased by 51% so with such a large increase a substantial increase in median lane use would be expected. Thus, the signs appear to have a greater long term effect than initially indicated (Weaver 1982).

Attempts to frame regulations to legalise this lane discipline have encountered many difficulties, such as defining the start and finish of overtaking, accounting for non-free flow conditions, and drivers moving to a position for future right turn manoeuvres. Therefore, since the existing advisory signs appear to be effective it may appear not worthwhile making the signs regulatory. However, the effectiveness of the signs may decrease with more widespread use so it may be appropriate to investigate the necessary regulation.

Difficulties with the framing of the regulation should be surmountable since a similar regulation is used in many other countries and is part of the United Nations 1968 Road Traffic Conventions Code of Practice.

Although there is no conclusive evidence regarding the likely effectiveness of the introduction of the "Keep Left Unless Overtaking" regulation, it would appear to be implicitly cost-beneficial.

It has also been proposed that the right turn priority rule should be reversed, since Victoria is the only Australian State in which right turning vehicles have priority over left turning vehicles.

The Victorian Government has already indicated that this change will be implemented (Dearn 1983). However, it should be noted that it is not a road trauma countermeasure since evidence suggests that conforming with the other States would not change the number of reported accidents (Daltrey 1981). Furthermore, it has been suggested that there could be an increase in the number of accidents during the change-over period (RACV 1982).

#### 4.2 INCREASED ENFORCEMENT AIMED AT DETERRENCE

Police enforcement of traffic legislation has two roles:

- . Detering potential offenders, through their fear of detection and the consequences, from committing traffic offences; and
- . Detection and apprehension of traffic offenders, with the aim of reducing their likelihood of re-offending by punishment or other treatments.

The RACV submitted that the principle objective of traffic law enforcement should be reductions in road trauma, and presented an enforcement priority programme, predominantly aimed at deterrence, which was claimed to be most cost-effective in meeting the objective. The Victoria Police proposed that increased emphasis should be given to "preventative" patrols involving highly visible surveillance, and to special "educative" operations coupled with mass media publicity.

These proposals are directed at the accident involvement and consequential injuries of all road users whose potential unsafe behaviours are proscribed by traffic legislation. The indirect aim is to change road user attitudes and behaviour.

Nearly all of the critical unsafe road user behaviours are legally proscribed currently. Police operations of the deterrence type have the potential to reduce all occurrences of unsafe illegal behaviours, not just those occurrences subsequent to a previous apprehension. For example, 37% of driver fatalities in Victoria during 1981 had an illegal blood alcohol level, whereas only 8% had been previously convicted of a drink-driving offence (South 1982).

A review of visible and publicised police operations aimed at drink-driving offences found that night-time casualty accidents were reduced by 20 - 35% in the area of influence during operations and for a few weeks after (Cameron and Sanderson 1982). In particular, random breath testing has been found to be highly cost-beneficial (Cameron and Strang 1982).

A well-publicised enforcement campaign in Victoria during part of 1981 aimed at rear seat belt offences resulted in an 86% increase in the seat belt use rate and a 17% reduction in death and injury in rear seats (Milne et al 1982, RoSTA 1983a). This campaign was probably cost-beneficial (SDC 1983).

A study in Western Australia found that sporadic but frequent visible police patrols at signalised intersections reduced the incidence of unsafe behaviour by drivers, such as "running the red". A visible mechanical surveillance device ("traffic violation photorecorder"), accompanied by large advance warning signs, was equally effective in reducing unsafe behaviour (Millar and Generowicz 1979). A later study found that a well-publicised visible photorecorder installation changed the accident pattern and reduced overall accident severity at the intersection (Maisey 1981). These two types of enforcement operations at signalised intersections are likely to be cost-beneficial.

A review of visible speed enforcement operations found little or no evidence of road trauma reductions (Sanderson 1982). Local effects on speed have been observed due to these operations, but over broad areas there was no evidence of speed reductions, even when the enforcement operations were publicised (Manders 1982). These findings have caused the cost-benefits of police enforcement aimed at deterring speeding to be questioned (Sanderson 1982).

The costs of providing a visible police "presence" can be substantial, though there are ways of minimizing this cost through the use of highly visible random breath test stations and visible mechanical surveillance devices. In addition, mass media publicity is an important adjunct to deterrence enforcement operations, and the cost of this can also be substantial. Nevertheless, there is evidence that a concerted programme of police enforcement, aimed at deterring certain offences with highest priority, would be cost-beneficial in terms of reducing road trauma. The priority forms of enforcement operations should be:

1. Highly visible random check stops, or publicised and visible police patrols, aimed at deterring potential offenders for drink-driving and seat belt offences.
2. Sporadic but frequent visible police patrols at signalised intersections, or visible mechanical surveillance devices accompanied by advance warning signs, aimed at deterring potential offenders disobeying traffic control signals.

The programme does not require new legislation as its basis and could be implemented in the short term.

#### 4.3 INCREASED ENFORCEMENT AIMED AT DETECTION AND APPREHENSION

The Victoria Police and the Police Surgeon submitted that there should be increased enforcement resources to improve detection levels, for example, more speed detectors and unmarked patrol cars. Another submission recommended increased breath testing at or near hotels. It was also proposed that enforcement resources should be selectively operated in high risk areas and times.

These proposals are principally directed at existing offenders and aim to reduce their subsequent involvement in offences and accidents by subjecting them to some form of punishment or treatment following apprehension. The punishment may typically be a fine and/or licence withdrawal, and the treatment may be of the educational or rehabilitative type.

Although nearly all critical unsafe road user behaviours are legally proscribed, police enforcement aimed at detection and apprehension tends to focus on only one illegal behaviour and hence its potential effect is limited. Its effects are further limited, in terms of road safety benefits, by being principally directed at unsafe behaviour subsequent to the offence detected and apprehended. For example, only 8% of the Victorian drivers killed in 1981 with an illegal blood alcohol level had a previous drink-driving conviction (South 1982). This was less than one-quarter of the illegal drink-drivers killed in that year.

A study in Perth in which police patrols were more than tripled, but not given publicity, found a short-term but no long-term reduction in road trauma (Saunders 1977). In United States' localities in which drink-driving apprehensions were increased 2.5 times, there were small reductions in illegal drink-driving and declines in night-time crashes in some areas, but the results were not conclusive about the benefits of enforcement operations of this type (Ross 1981).

A careful study of selective enforcement at high accident locations avoided common methodological problems and found a 3% reduction in accidents due to the enforcement (Hauer and Cooper 1977). A review found very localised speed reductions from speed detection operations of the visible type (Sanderson 1982); this effect would probably be beneficial in reducing the energy build-up of vehicles approaching locations where accidents frequently occur.

Since detection and apprehension is not an end in itself, the effects of various post-apprehension activities applied to traffic offenders should also be considered. Two studies have found that heavy penalties are likely to reduce the rate of re-offending for law abiding drivers, but that they tend to be ignored by "problem" offenders (Willett 1973, Homel 1980). Licence withdrawal has been found to reduce accident rates during the disqualification period, even though at least 36% of disqualified drivers in Victoria continue to drive, because a substantial proportion do not and the remainder drive more carefully (Robinson 1977, Nicholls et al 1981).

Re-education programmes involving warning letters and group discussion meetings have been found to produce a 10 - 15% reduction in subsequent crashes for a short time and to be cost-beneficial (Coppin 1977). A review of treatment programmes for convicted drink-drivers found little evidence of effects on subsequent accidents (Nicholls et al 1981), but later research showed that an educative programme applied to first offenders can reduce re-offending (Reis 1982).

In summary, it appears that increased enforcement aimed at detection and apprehension would have small direct effects on road trauma and probably not be cost-beneficial. An exception would be visible speed detection operations at high accident locations, which is likely to be cost-beneficial.

The indirect effects of activities which follow apprehension of traffic offenders also appear to be small and not cost-beneficial for "problem" offenders, but perhaps marginally cost-beneficial for other offenders, in terms of reductions in road trauma.

Increased enforcement resources for speed detection at high accident locations could be implemented in the short term and would not require new legislation.

#### 4.4 UPGRADED EFFECTIVENESS OF SANCTIONS FOR TRAFFIC OFFENDERS

Many submissions proposed that the effectiveness of sanctions for traffic offenders should be upgraded. A major review of penalties was called for, and the RTA suggested that radical increases for selected traffic offences may be warranted. Another theme was improvements in the licence withdrawal sanction, typically by the addition of photographs to drivers' licences. The RACS proposed that licence cards should include the driver's photograph and signature, and that drivers should be required to carry the cards and provide signatures on request.

One aim of these proposals clearly is to reduce subsequent traffic offences and accident involvements of apprehended drivers. In theory, licence withdrawal temporarily incapacitates the offending driver. The objective of severe penalties is to discourage the driver from re-offending through his actual experience of the consequences.

Another aim of some of these proposals is to deter potential offenders through their fear of severe consequences which would follow detection.

In support of the first aim, it has been found in California that drivers with one or more traffic convictions in three years have at least twice the risk of subsequent accident involvement, compared to those with no convictions. Furthermore, 55% of

accident-involved drivers have had at least one conviction in the previous three years (Coppin 1977).

There is no doubt that licence withdrawal works in terms of reducing the subsequent accidents of convicted drivers, albeit temporarily and inefficiently (Nicholls et al 1981). Even though at least 36% of disqualified drivers in Victoria continue to drive, a substantial proportion do not and the remainder drive more carefully (Robinson 1977). The addition of photographs on licences is likely to improve the efficiency of the licence withdrawal process and result in additional reductions in accidents involving disqualified drivers.

Regarding accidents subsequent to the disqualification period, there is evidence that for some drivers, longer rather than shorter licence withdrawal periods are a deterrent to committing subsequent offences. However, this does not apply for "problem" traffic offenders (Homel 1980). This finding seems to apply to heavy traffic offence sanctions of any type (Willet 1973).

Regarding increases in monetary penalties, the maximum penalties for offences under the Motor Car Act and the Road Traffic Regulations were all increased during 1982 or 1983. However, it is not known whether magistrates have increased the actual penalties applied to traffic offenders during the last few years.

The effect of severe sanctions in deterring potential offenders has been reviewed (Brody 1979, Ross 1981). Increases in the severity of punishment, without a concomitant change in the (perceived) risk of punishment, produce little or no effect. It appears that at very low levels of the risk of apprehension (as appears to be the case in Victoria), any amount of penalty can be dismissed.

Since the cost of providing photographs on licences would be relatively small in comparison with the likely benefits resulting from the consequent improvements in the efficiency of the licence withdrawal process, it appears that this particular proposal is likely to be cost-beneficial. Other proposals to upgrade the effectiveness of sanctions for traffic offenders would be at best marginally cost-beneficial for some types of offenders, in the absence of an increased (perceived) risk of apprehension through an increased programme of enforcement operations aimed at deterrence (see Section 4.2).

Introduction of drivers' licences with photographs would appear to require new legislation and could be fully implemented in the medium term as licences are renewed.

#### 4.5 CONDITIONAL LICENCE REINSTATEMENT FOLLOWING DISQUALIFICATION

The Victoria Police submitted that disqualified drivers should, at the end of their disqualification period, be issued a conditional licence applicable for three years before being eligible for a full licence. Further suspension would be an automatic penalty for any safety-related offence. It is understood that identification plates and driving restrictions would be required of the conditional licence holder under the proposed system. In general, the proposal is similar to the existing probationary licence system, in which "P" plates and a speed limit are required (during the first year) and automatic cancellation follows conviction for certain offences.

This proposal is clearly aimed at disqualified then re-licensed drivers and seeks to reduce their subsequent accident involvement through increased Police supervision and swift, mandatory penalties for traffic offences. In California, it has been found that drivers with one or more traffic convictions in three years have at least twice the risk of subsequent accident involvement, compared to those with no convictions (Coppin 1977).

The proposal appears to be novel and without precedent. The closest parallel is the existing probationary licence system. Unfortunately, the road trauma benefits of that system are unknown. The provisional licence scheme in New South Wales is similar to the Victorian system, but applies to first year drivers only. An evaluation of that scheme found a small reduction in the accident rate of first year drivers, but the authors were cautious about the conclusion because of doubts about the validity of their data (Henderson and Messiter 1970).

In the absence of conclusive or suggestive evidence regarding the likely benefits of conditional licence reinstatement following disqualification, it is not possible at this time to endorse the proposal as being cost-beneficial.

#### 4.6 TESTS OF PHYSICAL CONDITION OF DRIVERS

A number of submissions proposed that there should be compulsory regular checks of the physical condition of Victorian drivers, particularly older drivers. One proposal was for medical tests of aged drivers on each licence renewal. A number of proposals called for compulsory periodic eye tests, either for drivers of all ages or for drivers above a certain age, eg, 55 or 70.

These proposals are directed particularly at the accident involvement of older drivers and aim to reduce this by limiting their exposure or raising awareness of a specific physical disability.

Two review studies have shown that while medically disabled drivers have about twice the accident rate per kilometre driven compared with other drivers, their rate per driver is no different (Ysander 1970, Janke et al 1978). Presumably medically disabled drivers reduce their exposure to compensate for their disabilities (Simpson et al 1977).

Regarding eyesight disabilities, an early review found no link between accident involvement and dynamic or static visual acuity deficiencies among drivers (Burg 1964). However, a more recent review found evidence of a weak link with dynamic acuity, angular movement detection, and detection of movement in depth, especially among older drivers (Davison 1978).

Less than 1.5% of drivers involved in accidents have medical disabilities which are contributory (McLean et al 1979). Similarly, less than 1.5% have static visual acuity deficiencies (McLean et al 1979). The role of dynamic acuity defects and other visual problems in accidents is unknown.

Few if any programmes of medical or eyesight screening have been evaluated in terms of the effect on road trauma. The effects of a North Carolina programme on drivers with cardiovascular disorders or epilepsy/seizure problems were promising, but methodological problems rendered the study inconclusive (Popkin et al 1981).

In the absence of conclusive or suggestive evidence regarding the benefits of programmes of medical or eyesight checks of drivers, including programmes specifically for older drivers, it is not possible at this time to endorse any of the proposals as being cost-beneficial.

Essentially the same conclusion was reached by the Licensing and Medical Fitness Committee of the RTA in its recent report (RTA 1983f). The Committee concluded that any countermeasures to be introduced in this area would require to be relatively inexpensive to implement if they are to be cost-beneficial. Accordingly, the Committee recommended that consideration be given to introducing a system of compulsory reporting by medical practitioners of those medical defects likely to affect safe driving.

Since such a system could be introduced at little or no cost, in the consultants' opinion the system would be implicitly cost-beneficial. The system could be introduced in the short-term and would require new legislation.

## 5. POST-LICENCE EDUCATION

Post-licence education programmes were defined as those embracing drivers and motorcyclists in a general sense, rather than being focussed on road users coming to notice through involvement in traffic offences or accidents. The programmes are aimed at improving knowledge, attitudes or skills by educational means rather than by coercive processes based on legislation and enforcement.

### 5.1 DRIVER TRAINING FOR NOVICE DRIVERS

A proposal was submitted that driver training should be provided for novice drivers during their "P"-plate phase. The submission did not suggest whether attendance at the training would be voluntary, by inducement, or compulsory.

The proposal is directed at the accident involvement of novice drivers and aims to increase their vehicle operating skills.

Unfortunately, various road safety authorities have been unable to find evidence of a link between car driving skills and road trauma (AAA 1981, HRSCRS 1982). Driving skill deficiencies have been found relevant in less than 5% of crash involvements (Treat 1977, McLean et al 1979).

In December 1982, Skilled Drivers of Australia Limited introduced a driving skills training programme for 18-25 year old drivers which relies upon an insurance discount as an inducement to attend. An evaluation study is in progress and preliminary results are inconclusive at this stage (Keane 1983). It is not clear whether the study is assessing the benefits of the programme in terms of reduced crash risk, or merely its ability to attract drivers with a good insurance risk prior to attending the course.

Post-licence driver "training" courses can be divided into defensive driving courses (aiming to help drivers avoid getting into critical situations) and advanced driving courses (aiming to help drivers cope with critical situations). It is understood that the proposed programme and the existing Skilled Drivers of Australia programme have greatest emphasis on advanced driver training.

A review of evaluation studies found no evidence that either advanced or defensive driving courses reduce accident involvement of those who attend (Saffron 1981). A later study of an advanced driving course in Melbourne also found no evidence of accident reductions (Manders and Rennie 1982). Similarly, a study of a mixed defensive/advanced driver training course for novice drivers in Adelaide found no accident benefits (Holubowycz and McLean 1980).

On a more disturbing note, a study found that following voluntary attendance at a skill-oriented advanced driver training course in Sydney, those trained recorded increases in traffic convictions, particularly for speeding (Sowerbutts 1975). This is consistent with another study which found that drivers attending an advanced driver training course were more likely than non-attendees to be male, under 25 years old, single, have a "motoring" lifestyle, consider themselves better than average drivers, and have poor attitudes towards driving (Perry 1978 et al).

In the absence of evidence that driver training courses for novice drivers have any road safety benefits, and the possibility that skill-oriented courses may increase certain traffic offences, it is not possible at this time to endorse the proposal as being cost-beneficial.

## 5.2 GENERAL ROAD SAFETY PUBLICITY CAMPAIGNS

A number of submissions called for increased use of road safety publicity campaigns of a general type. Two submissions proposed that cinemas (especially drive-in cinemas) and television stations should show films on road laws and driving safety. Other submissions called for monthly road safety campaigns and marketing and publicity programmes aimed at long-term changes in attitudes. Another proposed that road death and injury statistics should be given greater emphasis in order to raise public consciousness.

These proposals are directed at the accident involvement of all road users, and aim to increase their knowledge of the road accident problem generally and consequently change their attitudes to unsafe road use.

Specific knowledge of safe road use is obviously a prerequisite to safe road behaviour, however the proposed campaigns would contain relatively little specific detail. Studies have shown that unsafe human behaviours are probable causes of over 90% of accidents (Treat et al 1977).

A comprehensive review of road safety publicity by the Commonwealth Government's Expert Group on Road Safety concluded that it is well established that generalised appeals for safe behaviour are ineffective. Further, there is a danger that uncritical and widespread implementation of such programmes may have an adverse effect by making road users immune to attempts to modify their behaviour (EGORS 1977).

On the basis of the demonstrated ineffectiveness and potentially counter-productive influence of general road safety publicity campaigns, it is not possible to endorse any of the proposed campaigns as being cost-beneficial.

### 5.3 PUBLICITY CAMPAIGNS FOCUSED ON SPECIFIC PROBLEMS

In contrast to the submissions described in Section 5.2, a number of submissions called for increased publicity campaigns focussed on specific road user groups or unsafe behaviours. The RTA proposed increased publicity to improve knowledge of traffic laws and safe practices, and to support police enforcement, particularly in relation to drink-driving, speed and usage of occupant restraints. The RACV proposed the use of scientifically developed and evaluated publicity programmes, characterised by addressing specific problems. Similarly, the RACS submitted that there should be community awareness programmes for specific road safety problems. Other submissions proposed public education of defensive driving habits, and that specific advice should be given on the relationship between excessive speed and accident risk.

While general in concept, in practice these proposals are directed at specific road user groups and behaviours for which prior research has identified a significant road trauma problem. The proposals aim to increase knowledge of safe road behaviour and indirectly to create positive attitudes towards safe behaviour.

Relatively few road safety campaigns have been evaluated in terms of the ultimate criterion of road trauma reductions, one notable exception being a combined publicity and enforcement campaign in Victoria during 1981 aimed at increasing rear seat belt usage. A study showed a 17% reduction in death and serious injury to rear seat occupants during the 6 months after the campaign (RoSTA 1983a). This appeared to result from an 86% increase in the rear seat belt use rate during the campaign (Milne et al 1982) which was maintained at that level at least 9 months later (Manders 1983).

Two other studies showed that television publicity increased correct seat belt adjustment by 8-49% (Johnston and Cameron 1979) and that a child restraint campaign in Victoria resulted in a 15% increase in the use of restraints by children aged 10 months to 4 years (Wood undated).

A motorcycle conspicuity campaign in Victoria produced a 27% increase in daytime headlight use and an increase in the use of conspicuous clothing, at least temporarily (Huebner 1980). Coupled with the finding that an increase in daytime headlight use (due to compulsion) in North Carolina produced an 18% decrease in daylight multi-vehicle crashes involving motorcycles (Waller and Griffin 1981), it is likely that the Victorian campaign resulted in a reduction in motorcycle crashes. Since multi-vehicle motorcycle crashes are usually severe, it is likely that significant benefits resulted.

In the drink-driving area, a large multi-media campaign in New South Wales produced an increase in drink-driving knowledge and positive attitudes (Henderson and Freedman 1976). A carefully developed set of four television advertisements produced by the Australian Government was evaluated in Tasmania and produced changes in knowledge, attitudes and self-reported behaviour with respect to drink-driving (Boughton and South 1983). Similar results were achieved from a campaign in Britain focussed on the 20-30 year old male working class group (Sabey 1982). However, none of these campaigns have been evaluated in terms of observed drink-driving behaviour or accident involvement, so their effect on the ultimate criterion of road trauma reductions is unknown.

Drink-driving publicity has been part of a "package" of drink-driving countermeasures (which also includes random breath testing and increased penalties) used in Victoria since 1978. The "package" appears to have been largely responsible for the reduction in illegal blood alcohol levels among drivers killed or injured in Victoria during 1979-82 (SDC 1983), but the importance of drink-driving publicity in the package is unknown. Studies of

the road trauma effects of concentrated random breath testing operations, accompanied by drink-driving publicity ranging from nil to an intensive campaign, have found no evidence of an additional effect due to publicity (Cameron and Sanderson 1982).

A multi-media campaign aimed at reducing speeding by emphasising the availability of radar speed detectors was evaluated in Victorian country areas, where it was accompanied by an increase in the level and visibility of speed enforcement operations in some places. The campaign was unable to produce a change in speed behaviour, no matter whether it was accompanied by increased enforcement activity or not (Manders 1982).

The cost of a typical multi-media campaign for 2-3 months involving television, radio and printed media (posters, leaflets and stickers) is approximately \$120,000 - 140,000. Large campaigns are more expensive, with the Victorian rear seat belt campaign costing \$200,000 (Milne et al 1982) and the New South Wales drink-driving campaign costing \$350,000 (Henderson and Freedman 1976).

Notwithstanding these large costs, it is likely that publicity campaigns aimed at increasing seat belt use among specific road groups, or at increasing motorcycle conspicuity, would be cost-beneficial. In the absence of evidence of effects on road trauma or drink-driving behaviour, drink-driving campaigns have unknown cost-benefits and cannot be endorsed at this time. Publicity campaigns aimed at reducing speeding are unlikely to be cost-beneficial and cannot be endorsed. Publicity campaigns can be implemented in the short-term and do not require new legislation as a basis.

#### 5.4 REDUCTION IN DRUG USE BY DRIVERS

The Victoria Police submitted that health groups should be required to notify persons prescribed certain drugs of the potential effects on their driving. The Police and RACS also

proposed that prescribed drugs should carry labels describing the potential effects on driving.

Because feasible countermeasures in the drug-driving area appear to be, at this stage, solely of the educational type, they are discussed under post-licence education in this report. However, another submission proposed compulsory drug tests for accident participants attending hospitals. This submission perhaps reflects an ignorance of the practical difficulties of testing for drugs other than alcohol, and of the absence of information to set a safe legal driving limit for these drugs.

The feasible proposals are directed at the accident involvement of drivers, motorcyclists and pedestrians using prescribed drugs, and aim to increase their knowledge of drugs or drug-combinations which increase accident risk.

It is known that there are specific drugs which increase risk when used by certain types of road users, especially when used in conjunction with alcohol (Hendtlass and Starmer 1983, McPherson et al undated). The involvement of drugs in accidents in Victoria is unknown, but is currently the subject of research among killed drivers and pedestrians (Hendtlass 1981). However, there is a high potential involvement, as a survey of Melbourne drivers at night showed that 8.4% had used medication that day (4.4% in categories of drugs known to affect driving-related skills), compared with 2.1% of drivers in the same survey found to have illegal blood alcohol levels (Hendtlass 1983).

The likely effects of public education provided by prescribing medical officers, and on labels of specific drugs, are unknown. However, it seems likely that such a public education programme would have high credibility, that the message would be received by drivers potentially at risk from certain drugs, and that knowledge of the danger would be increased. Given the relatively small cost of the programme, in the opinion of the consultants there is implicit evidence that it would be cost-beneficial. However, given the lack of evidence regarding

likely effects on road trauma, the programme should be introduced on a pilot basis and scientifically evaluated before being extended throughout the State on a permanent basis.

In addition, because the programme relies on presenting credible information, there is a need for more definitive and specific research on the combinations of drugs and road users which result in inflated accident risks.

A pilot programme of public education through prescribing medical officers and on labels of drug containers, conveying information on specific drug and road user combinations with inflated accident risks, could be introduced in the medium term and would appear not to require new legislation as its basis. However, an on-going programme resulting out of the pilot may require a legislative base to ensure its continuing use.

## 6. POST-LICENCE RE-EDUCATION

Post-licence re-education programmes are those aimed at re-educating drivers and motorcyclists who come to the attention of the authorities as being unable or unwilling to operate safely in the road traffic system. Drivers usually come to notice through demerit points, traffic convictions or involvement in accidents.

### 6.1 DRIVER IMPROVEMENT PROGRAMMES FOR TRAFFIC OFFENDERS

Four submissions (including the RTA and the RACV) proposed further development and expansion of the existing RTA Driver Improvement Programme operating on a pilot basis in the central part of Victoria. The existing programme is based on the demerit point system, as follows:

- . Drivers incurring two entries to the system in three years receive a warning letter and a safe driving information pamphlet.
- . Drivers incurring a third entry in three years are invited to a Group Educational Meeting (GEM) aimed at improving attitudes and adopting defensive driving tactics.

Drivers who continue to accumulate demerit points face a licence renewal surcharge and ultimately licence suspension, in the normal way.

The RACV also proposed that the demerit points system should be revised to better identify drivers with a high accident risk.

The Victoria Police submitted that there should be compulsory defensive driver courses for persistent traffic offenders and accident repeaters.

These proposals are clearly directed at drivers with multiple traffic offences or involvement in accidents, and aim to improve their knowledge and attitudes regarding safe driving.

Studies in California have found that drivers with two or more convictions in three years had at least 2.7 times the risk of subsequent accident involvement, compared with conviction-free drivers. Drivers with two or more convictions represented only 14% of the total, yet were involved in 29% of accidents in the subsequent three year period (Coppin 1977).

The warning letter and GEM are based on components of a driver improvement programme which was operating for many years in California until recently. Early research on the Californian programme showed each of these components to be cost-beneficial in reducing accidents, with the GEM having the largest effects, but also the largest costs (Coppin 1977).

Initially, attendance at the GEM was voluntary, then made mandatory, and then made voluntary again. The effect of the mandatory GEM was apparently little different from that of receiving an invitation to the initial voluntary GEM (with 50% attendance) (Marsh 1978), estimated as a 19% accident reduction during the subsequent six months (Kadell et al 1980). However, the later voluntary GEM achieved only a 7% accident reduction (Kadell et al 1980). The trend in the reduced effectiveness of the GEM continued (Wootton et al 1981) so that it became not cost-beneficial and was removed from a revised driver improvement programme in 1982 (Marsh 1983).

In summary, during its initial years, a mandatory GEM with about 50% attendance is likely to achieve an approximate 19% accident reduction during the subsequent six months for those drivers who are invited to the course. Based on Californian experience, the effect is likely to become smaller in later years as the driving population habituates to the GEM programme. Thus, if the existing pilot programme were to be expanded and established on a permanent basis in Victoria, there would be a continuing need to evaluate and monitor the effects of its components on road trauma.

The costs of developing the warning letter and GEM programmes have already been expended in the pilot programme. The operational costs of providing a warning letter are miniscule (30 cents per letter in California (Kadell et al 1980)) in comparison to \$22.50 per driver invited to a GEM (Bodi 1982). Based on the GEM costs, it has been calculated that for the GEM to break-even, it would need to reduce the casualty accidents of drivers invited to the course by 4% in the subsequent six months. Since the likely effect is a 19% reduction, at least initially, the proposed developed and expanded programme is likely to be cost-beneficial. A rider to this conclusion is that the GEM attendance rate should be raised to approximately 50% in the developed programme; currently in the pilot programme the attendance rate is only 25% (RACV 1983). However, there is no strong case for mandatory attendance.

A further refinement to the existing procedures in the pilot programme would be a better method of identifying drivers with a high accident risk. One approach may be to restructure the demerit point system so that higher points are given to offences associated with high risk of road trauma. On this point, a study found that complex point systems gave no better identification than a simple count of the number of traffic violations (Coppin and Peck 1965). However, identification efficiency was increased when previous reported crashes were added to the violation count (Coppin 1977). A further benefit of using accidents in the identification procedure is that it may isolate drivers more amenable to change by educational methods. A study of an accident-avoidance group meeting provided to Californian drivers with accident records showed a 23% accident reduction during the subsequent twelve month period (Melander 1983). This effect of an educational programme is larger than that of similar programmes provided to drivers identified primarily by violations.

In conclusion, the addition of reported accidents to the existing criteria (demerit point system entries) for identifying drivers as candidates for the Victorian driver improvement

programme would appear to result in increased benefits. The cost would include the establishment of a central driver record containing violations and accidents, but this would have many peripheral benefits as well as being an essential tool for conducting on-going evaluations of components of the programme. In the consultants' opinion, the addition of reported accidents would be implicitly cost-beneficial.

The proposed development and expansion of the existing RTA pilot Driver Improvement Programme, as well as the establishment of a central driver record containing violations and reported accidents, could be fully implemented in the medium term and would not require new legislation as its basis.

## 6.2 ADVANCED DRIVER TRAINING COURSES FOR TRAFFIC OFFENDERS

The Victoria Police submitted that advanced driver training courses should be provided for disqualified drivers, and that satisfactory completion should be a condition of re-licensing.

The proposal is directed at the subsequent accident involvement of disqualified drivers and aims to increase their vehicle operating skills.

Unfortunately, various road safety authorities have been unable to find evidence of a link between car driving skills and road trauma (AAA 1981, HRSCRS 1982). Driving skill deficiencies have been found relevant in less than 5% of crash involvements (Treat 1977, McLean et al 1979).

A review of evaluation studies found no evidence that advanced driver training courses reduce accident involvement of those who attend (Saffron 1981). A later study of an advanced driving course in Melbourne also found no evidence of accident reductions (Manders and Rennie 1982). Furthermore, an earlier study found that following attendance at a skill-oriented advanced driver training course in Sydney, those trained recorded

increases in traffic convictions, particularly for speeding (Sowerbutts 1975).

In the absence of evidence that advanced driver training courses have any road safety benefits, it is not possible at this time to endorse the proposal as being cost-beneficial.

## 7. DRINK-DRIVING COUNTERMEASURES

Owing to the level of drink-driving involvement in serious accidents, it is not surprising tht many submissions proposed countermeasures specifically in the drink-driving area.

In Victoria during 1982, 40% of drivers killed and 18% of drivers attending hospitals had a blood alcohol level above 0.05%, the legal limit (RoSTA undated). Drink-drivers have twice the risk of accident involvement at a blood alcohol level of 0.05% compared with sober drivers, the risk rising to at least ten times at 0.15% (Borkenstein et al 1964, McLean et al 1980).

Drink-driving countermeasures have received considerable recent impetus in the United States through the advent of the Presidential Commission on Drunk Driving and major countermeasure initiatives in States like New York (Friedman and Mingione 1983). The National Highway Traffic Safety Administration of the U.S Department of Transportation is focussing on drink-driving as a priority area for countermeasure development and implementation (Smith 1983b, Waller 1983).

In Victoria, the minimum driver licensing age and the minimum age for purchase of alcoholic beverages are both 18. Victoria is unique among the Australian States in having such a high licensing age; most States have 17. Most States in the U.S have a de facto minimum licensing age of 16; essentially the only prior condition to apply for a driving licence at that age is satisfactory completion of high school driver education, which is available almost universally.

The coincidentalness of Victoria's minimum ages of driving and purchase of alcohol is considered by some to be a factor in causing the high accident involvement rate of inexperienced drivers in Victoria. First year drivers have four times the casualty accident rate compared with drivers with three or more years of experience (Deutsch et al 1981). A number of submissions proposed strategies to separate inexperienced driving

from the liberal consumption of alcohol which the right to purchase it allows. Three proposed strategies of this type will be discussed initially before dealing with general countermeasures for drink-driving.

### 7.1 INCREASED LICENSING AGE

The RTA proposed an increase in the licensing age, apparently as a drink-driving countermeasure, but commented that it is unlikely to be accepted by the public at this time. Therefore, it would not be observed unless there was a large increase in enforcement and/or significant changes in community attitudes, according to the RTA.

The proposal is directed at the accident involvement of 18 and perhaps 19 and 20 year old drivers, dependent on the number of years the licensing age would be increased. It aims to reduce their accident involvement by reducing their exposure to the road system.

Drivers aged 18-24 have higher accident rates than older drivers, and there is evidence that they are particularly susceptible at blood alcohol levels above 0.05% (OECD 1978). Recently, evidence has emerged that the accident risk of young drivers aged 16-19 is increased when driving with positive blood alcohol levels even below 0.05% (Mayhew 1983). This research backs up laboratory findings of decrements in driving-related skills at low blood alcohol levels, in particular for young subjects (Lovibond 1977, Laurell 1977, Landauer and Howat 1983, Flanagan et al 1983). Some 18% of drivers who were killed or admitted to hospital in Victoria during 1981 were aged 18 or 19 (RoSTA 1983b).

An increase in the minimum licensing age would probably not be 100% effective in preventing driving by 18 year olds and higher age groups, judging by the extent of driving while disqualified in Victoria. A survey found that at least 36% of

disqualified drivers continue to drive (Robinson 1977). In addition, 18 year olds would probably continue to be exposed to the road system as vehicle occupants, if not as drivers. Notwithstanding these weaknesses in the proposed countermeasure, there is little doubt that raising the minimum licensing age would have a substantial effect on the exposure to the road system and consequent road trauma of young persons (IIHS 1984).

However, the cost of an increased licensing age would also be substantial. While the value of personal motorised mobility remains unquantified, there is little doubt that its loss would represent an enormous cost to persons aged 18 and perhaps one or two years older. There is research which concluded that "young people would appear to value travel time saved and lost more highly than older people" (Lee and Dalvi 1969).

Due to the potentially large but unquantified cost to young persons which would result from an increased licensing age, coupled with an inability to quantify the accident reduction benefits which would result from the proposal, it is not possible at this time to endorse the proposal as being cost-beneficial.

## 7.2 INCREASED DRINKING AGE

The RTA also proposed an increase in the minimum age for purchase of alcoholic beverages as a drink-driving countermeasure, and again commented that, like an increased licensing age, it is unlikely to be accepted by the public at this time. The minimum age at which alcohol can be purchased is loosely labelled the "drinking age" since it determines the time at which alcohol becomes easily available; however, in fact, many young persons begin drinking alcohol at earlier ages, but presumably under more controlled conditions.

Like the previous proposal, this is also directed at the accident involvement of 18 and perhaps 19 and 20 year old drivers, dependent on the number of years the drinking age is

increased. It aims to reduce their accident involvement by reducing their access to alcohol and, as a consequence, reducing their drink-driving behaviour.

Again like the previous one, this proposal is based on evidence that young drivers are particularly susceptible to accident involvement at blood alcohol levels above 0.05% (OECD 1978, Mayhew 1983). Some 30% of drivers aged 18 or 19 who were killed or admitted to hospital in Victoria during 1981 had positive blood alcohol levels (RoSTA 1983b). A recent RTA study indicated that this high level of alcohol involvement is a function of driver age rather than driver experience; drivers with short experience did not tend to be involved in a greater proportion of alcohol-involved accidents, whereas older drivers were involved in a smaller proportion no matter how little time they had been licensed (Charlesworth and South 1983).

Some 30 States in the U.S have increased their legal drinking age in recent years - usually from 18 to as high as 21 in many cases (Wagenaar 1983). Many of the same States had reduced the drinking age during the early 1970's and subsequently found that young drivers under 21 suffered increased fatal crashes of the types in which alcohol is involved (Williams et al 1983).

Numerous studies of the effects of the recent increases have been conducted in individual States and have all reached the conclusion that alcohol-related crashes involving young drivers affected by the changes have been reduced (Wagenaar 1982 reviews these studies). Another study combined the results from nine States with increased drinking ages and found an overall 28% reduction in night-time fatal crash involvements among the age groups affected (Williams et al 1983). One reviewer cautioned against greater expectations from a change of this type; an increased age for the legal purchase of alcohol only reduces the availability of alcohol, but does not eliminate it for those "under age" (Wagenaar 1982).

The costs of an increased drinking age are difficult to define, but do not appear to include a substantial effect on the personal mobility of young persons, unlike the previous proposal. However, there would be intangible costs from restricted access to alcoholic beverages during the years of age which many young people consider to be socially important. A cost to the Government would be a loss of excise taxes on alcohol beverages which otherwise would have been purchased by young people. When an increased drinking age was proposed in North Carolina, this loss was estimated as US\$3.5 million p.a., compared with a saving of US\$6 million per annum in terms of the lives of young drivers {Waller 1983}.

The US Presidential Commission on Drunk Driving in its recent final report has recommended that all States should immediately adopt 21 years as the minimum legal purchasing and public possession age for all alcoholic beverages {Presidential Commission 1983}.

Based on the proven effects of an increased legal drinking age in terms of reducing the road trauma of young drivers who would be affected, and the apparently small but unquantified intangible costs resulting from restricted access to alcohol, it is apparent that the proposal would be highly cost-beneficial. This conclusion would apply to an increase in the legal drinking age from 18 to 19, 20 or 21. The change would require new legislation as its basis and could be implemented in the short-term.

### 7.3 LOWER BLOOD ALCOHOL LIMITS

The RTA and other submissions proposed that the legal blood alcohol limit should be zero for drivers holding learner permits and during their first year of probationary licensing. The RACS Proposed a similar requirement, but extended to the full three years of probationary licensing, with a requirement that a "P" plate should be displayed throughout this period. The Police

Surgeon submitted that a zero legal limit for all drivers should be a long-term aim.

Most of these proposals are directed at the accident involvement of novice drivers and aim to reduce their drink-driving behaviour.

There is evidence that drivers aged 18-24 are particularly susceptible to accident involvement at blood alcohol levels above 0.05% (OECD 1978) and that drivers aged 16-19 have increased risks even at positive levels below 0.05% (Mayhew 1983). The same research does not indicate any special susceptibility for older drivers. Laboratory studies showing decrements in driving-related skills at low blood alcohol levels have in general been confined to young drivers.

The consultants have been unable to find evidence of a special susceptibility to alcohol for novice drivers as a group; not all novice drivers are young, with about 27% obtaining their first car licence at age 25 or older (Healy 1981). Furthermore, a recent RTA study indicated that drivers involved in casualty accidents display high levels of alcohol involvement at younger ages; a similar result was not found for novice drivers (Charlesworth and South 1983).

Thus a countermeasure of the proposed type would have a stronger basis if it were directed at young drivers rather than novice drivers of all ages.

Drivers aged 18 and 19 represented 18% of drivers killed or admitted to hospital in Victoria during 1981, and of these 30% had positive blood alcohol levels (RoSTA 1983b). Novice drivers, defined as learner permit and probationary licence holders, represented 24% of drivers involved in casualty crashes in 1980 (RoSTA 1981a). Some 24% of first year licence holders had positive blood alcohol levels, compared with 30% of these in their second or third year, and 25% of standard licence holders.

It should be noted that the proposed countermeasures are clearly aimed at reducing drink-driving at blood alcohol levels both below and above the current legal level of 0.05%, even though only positive levels below 0.05% would be newly proscribed. There would be little potential effect if the aim was solely to reduce drink-driving below 0.05%, because only about 3% of either novice drivers or 18-19 year old drivers killed or seriously injured have blood alcohol readings in this range (RoSTA 1981a, 1983b).

Legislation of a type which requires first year drivers to have a zero blood alcohol level has been in operation in Tasmania since 1970. From a scientific viewpoint, the evaluations which have been conducted show no evidence of a reduction in fatal accidents involving first year drivers (Drew 1976) or of a reduction in the blood alcohol levels of first year drivers killed (Kelly 1980). However, studies based on fatal accidents would probably have been too insensitive to show any effects. Notwithstanding this, various reviewers have concluded that there is an absence of scientific evidence of casualty crash reductions among first year drivers as a result of the Tasmanian legislation (Australian Law Reform Commission 1976, Homel 1982, 1983).

The Tasmanian situation appears to be unique as a long-term basis for assessing the likely effects of the proposed countermeasures. However, a comprehensive review of drink-driving deterrence concluded that any new legislation, provided it is well-publicised and increases the perceived risk of detection of the offence, will reduce drink-driving and consequent road trauma of the drivers at which it is directed for at least a few months and up to one year (Ross 1981). Thus it is likely that the well-publicised introduction of a zero blood alcohol level requirement for novice drivers would have a substantial effect on their drink-driving accidents for at least a short period.

However, a better basis for the zero alcohol requirement would be young drivers, say those aged 18 and 19. In contrast with novice drivers as a group, there is stronger evidence that young drivers are particularly susceptible to alcohol and that a substantial proportion of young driver casualties have positive blood alcohol levels. Not all novice drivers are in the age group for which drink-driving is a special problem.

In either case, the new requirement would need to be well-publicised if it is to have the intended effect on the road trauma of novice or young drivers. It is estimated that the necessary multi-media publicity campaign would cost of the order of \$135,000-\$145,000, and may need to be repeated.

In consideration of the stronger basis for a zero blood alcohol level requirement aimed at drivers aged 18 or 19 (in comparison with such a requirement for novice drivers as a whole), and of the relatively moderate costs of necessary publicity, it appears that age-based legislation of the proposed type is likely to be cost-beneficial. The evidence in favour of zero blood alcohol legislation for novice drivers (plus necessary accompanying publicity) is weaker, but proposals of this type are also likely to be cost-beneficial. However, there does not appear to be persuasive evidence to support a zero blood alcohol requirement for older or more experienced drivers at this time.

A programme of mass-media publicity and legislation aimed at either young drivers or novice drivers could be implemented in the short-term.

#### 7.4 GENERAL DETERRENCE

Programmes aimed at deterring drink-driving behaviour can be divided into two types of deterrence; "general" and "specific". General deterrence programmes aim at deterring potential drink-drivers, through their fear of detection and the consequences, from committing the offence. Specific deterrence programmes aim

at encouraging apprehended drink-drivers, through their actual experience of the consequences, to avoid re-offending.

Visible and publicised drink-driving enforcement is principally aimed at general deterrence. The RACV proposed that there should be increased use of integrated programmes of random breath testing (RBT), mobile drink-driving patrols and mass media publicity. It also proposed that such a programme could be focussed on novice drivers at various times, as a specific countermeasure to their drink-driving behaviour. A number of other submissions called for increased RBT operations, and the RACS proposed greater presence and visibility of drink-driving enforcement on Thursday, Friday and Saturday nights to raise perceptions of the likelihood of apprehension.

In general, these proposals are directed at the accident involvement of all potential drink-drivers, though some proposals do focus on specific types of driver and times of the week which are thought to represent a greater drink-driving problem. The indirect aim is to reduce drink-driving behaviour through changes in knowledge and attitudes regarding the risk of detection while drink-driving.

The research regarding the link between drink-driving and road trauma, and the substantial involvement of illegal blood alcohol levels in serious road crashes, has been previously described. Based on experience in Victoria during 1982, drink-driving countermeasures of the general deterrent type have the potential to reduce driver fatalities by 40% and drivers injured and attending hospitals by 18% (RoSTA undated).

In terms of the proposed measures, only the effects of random breath testing have been scientifically evaluated, and only when used in a relatively concentrated manner in a metropolitan area (Melbourne). A study of RBT operations concentrated in areas of Melbourne showed a reduction in serious casualty accidents (those involving death or hospitalisation) of at least 14% and up to 23% in the areas tested, during operations

and for two weeks after, plus a reduction of 11% in nearby areas {Cameron and Strang 1982}.

The effects measured in the above study appeared relatively uninfluenced by various combinations of drink-driving publicity {Cameron and Sanderson 1982}. However, experience with RBT in New South Wales indicates that effects can be achieved over broader areas if the testing operations are supported by mass media publicity. In the 9-1/2 month period from the introduction of RBT on 17th December, 1982, the road toll in New South Wales was reduced by 27% {Job 1983}; this State-wide effect appears larger than that which could have been achieved by RBT operations alone.

Regarding effects on driver attitudes, studies in Melbourne have shown that RBT (plus accompanying publicity, perhaps) has increased the perceived risk of detection while drink-driving, over the years the legislation has been in effect, and specifically during the periods of concentrated operations {Cameron et al 1980, South and Stuart 1983}. In Sydney, self-reported drink-driving behaviour has decreased since the introduction of RBT coupled with extensive publicity {Job 1983}.

Based on the observed effects of concentrated RBT in Melbourne, the accident reduction benefits are estimated to range between \$5400 and \$21,200 per hour of operation. Benefits of this magnitude may only result if operations are concentrated, ie., focussing on a specific area at the rate of about 20 hours per 100 square kilometres per week. Additional benefits from mass media publicity are unclear, but may result in a given number of RBT stations having effects over a broader area.

The cost of a mobile breath testing station averages \$15,000 and the operational costs are \$268 per hour {Crabb 1983}. From the Government's point of view, there is an additional benefit of \$274 per hour in the form of revenue from drink-driving fines, but this is not a productive benefit from the point of view of society generally.

Thus an increased programme of concentrated RBT would be highly cost-beneficial. However, this conclusion applies to operations in urban areas only; the effects of RBT operations alone (ie., without accompanying publicity) in rural areas are unknown. The programme would not require new legislation and could be implemented in the short-term.

The cost of a mass media publicity campaign (using television and radio) for two months to support RBT operations has been estimated as \$125,000 (RoSTA 1982a). In terms of the typical operating hours of RBT stations, this represents approximately \$1000 per hour to support one station; however, this figure would be reduced proportionally if more than one station operated in the area of coverage of the publicity.

Thus an integrated programme of concentrated RBT supported by mass media publicity would be cost-beneficial, and many even be highly cost-beneficial. This conclusion certainly applies to an integrated programme in urban areas and is also likely to apply in rural areas, based on experience in New South Wales. The integrated programme would not require new legislation and could be implemented in the short-term.

#### 7.5 PUBLIC EDUCATION

The RTA proposed that programmes should be developed to change community drinking patterns in a way that reduces high risk alcohol consumption behaviours. Another submission proposed that public education should be used to develop the general attitude that drink-driving is anti-social. The RACS submitted that equal television time should be given to anti-drink-driving publicity as is given to alcohol advertising.

These proposals are directed at the social environment with the general aim of influencing social attitudes towards drinking and driving, and the indirect aim of influencing drivers' attitudes and behaviour regarding drink-driving.

The link between drink-driving and road trauma, and the size of the problem, have been previously described. There is also research which indicates that the extent of drink-driving is directly related to the extent of drinking in a community (Hendtlass 1983).

A review of public education approaches to changing public attitudes towards drink-driving identified four different mechanisms (South 1982):

1. Modelling or advocating desired alternative behaviour patterns, to replace high risk drinking and drink-driving patterns,
2. More subtle "cognitive" effects,
3. Traditional educative processes,
4. Increasing the strength of moral inhibitions or internalised norms associated with drink-driving.

The same review found that only for drink-driving campaigns of the first type is there some evidence of effectiveness, of small magnitude and over short periods. This finding appears consistent with the effects observed from two major Australian campaigns based on modelling alternative behaviours. The first, aimed directly at potential drink-drivers, was carried out for 10 weeks in Sydney during 1974 using television and other media. The campaign produced an increase in drink-driving knowledge and a small improvement in attitudes towards drink-driving, at least in the short term (Henderson and Freedman 1976). The second campaign was based on four television commercials aimed at acquaintances of potential drink-drivers with the theme "Would you let a friend drive if he has had too much to drink". The two month, intensive campaign was evaluated in Tasmania and produced positive changes in knowledge, attitudes and self-reported behaviour with respect to drink-driving (Boughton and South 1983).

However, neither of these Australian campaigns has been evaluated in terms of observed drink-driving behaviour or accident involvement, so their ultimate effect is unknown. Hence mass media campaigns aimed at changing social attitudes towards drinking and drink-driving have unknown cost-benefits and cannot be endorsed at this time.

Regarding the relative amounts of television time given to drink-driving publicity and alcohol advertising, in 1977 it was found that the former was only 5% of the latter (Hendtlass et al 1981). While this is a large disparity, it was concluded in the previous paragraph that an increase in drink-driving publicity would have unknown benefits. In contrast, American research has shown that persons with greatest exposure to alcohol advertising are more likely to report drinking more and are more likely to report combining drinking and driving (Atkin and Block 1981, reported by Waller 1983).

It has been suggested that liquor advertising does not influence the total consumption of alcohol (Broderick 1983, Liquor Industry Consultative Council 1984). If this is so, a reduction in alcohol advertising would be without cost to the liquor industry and would have benefits in terms of reduced advertising costs and perhaps reduced liquor purchase prices. It may also reduce the extent of liquor consumption in Victoria and, as a consequence, the extent of drink-driving.

In the opinion of the consultants, a ban on the television advertising of alcohol products would be implicitly cost-beneficial in terms of reducing drink-driving and consequent road trauma. The alternative and proposed measure, namely to increase drink-driving publicity to a level commensurate with liquor advertising on television, has unknown cost-benefits.

A relatively recent development as a result of public education campaigns regarding drink-driving has been the formation of citizen's action groups. The best known of these is "Mothers Against Drunk Drivers" (MADD) in the United States, but

an equivalent group titled "People Against Drink Driving" (PADD) has recently been established in Victoria (O'Carroll 1983). While such groups may have an important role in further influencing public attitudes towards drink-driving, in general their activities have unknown effectiveness, with one exception.

The exception is programmes of citizen reporting of drink-drivers to the Police (Anderson et al 1983). The public are supplied with guides for visually detecting drink-drivers (NHTSA 1981) and reporting systems using telephones and CB radios are established. An important component is public information to motivate and encourage participation, and to inform potential drink-drivers of the increased risk of detection and apprehension. Some 19 States in the United States have initiated formal programmes of this type (Curry 1983). It is clear that the programmes are based on general deterrence of drink-drivers, needing only a proportion of successful apprehensions to keep the programme credible in the eyes of the public and the Police.

A citizen reporting programme in Colorado resulted in a 20% increase in drink-driving apprehensions and a 13% decrease in alcohol-related crashes (Curry 1983). A similar programme in Virginia produced raised public awareness, increased arrest perception, more drink-driving arrests, and decreased traffic fatalities (Howland et al 1983). The programme concept is well-based on the general deterrence approach, which is normally (but not necessarily) implemented only by Police resources, and which has been shown to be effective in reducing drink-driving (see Section 7.4).

The US Presidential Commission on Drunk Driving recommended that citizens should be encouraged by governmental and non-governmental groups to report drivers under the influence (Presidential Commission 1983).

On the basis of the relatively small costs involved, it is apparent that a programme of citizen reporting, aimed at deterring potential drink-drivers, would be cost-beneficial if

introduced in Victoria. The programme could be fully implemented in the medium-term and would not require new legislation as its basis.

## 7.6 SPECIFIC DETERRENCE

A number of submissions called for increased penalties for drink-driving offences. These proposals may have a specific deterrent effect in encouraging convicted drink-drivers, through their actual experience of the consequences, to avoid re-offending. The Victoria Police appeared to have a similar motive in their proposal that convicted drink-drivers should be required to display special identifying plates on their vehicle. A Stipendiary Magistrate called for greater use of good behaviour bonds, involving monetary sureties, to deter convicted drink-drivers from re-offending.

These proposals are predominantly aimed at the specific deterrence of convicted drink-drivers. The general deterrence effect of severe sanctions has been previously discussed (Section 4.4). The proposals are directed at the subsequent accident involvements of apprehended drink-drivers and aim to change their attitudes and behaviour with regard to the offence.

The consultants are unaware of evidence that a prior drink-driving conviction is an indicator of increased likelihood of involvement in a drink-driving accident, though this may be the case. A study has shown that 8% of the Victorian drivers killed in 1981 with an illegal blood alcohol level had a previous drink-driving conviction (South 1982). This represents the limit of the maximum potential which programmes aimed at specific deterrence of drink-driving can expect to achieve in terms of effects on road trauma.

A study of 1000 convicted drink-drivers in New South Wales examined the effects of different penalties on re-conviction rates, but not on subsequent accidents (Homel 1980). For

offenders classified as "good risk", in the sense that they were not reconvicted for drink-driving or for a criminal offence in three years, long periods of licence disqualification appeared to be a more effective deterrent to committing motoring offences or infringements than short periods. The data suggested that a period of at least a year, and preferably around 18 months, is optimal in terms of reconviction rates. However, the same study found that "high risk" offenders will re-offend for drink-driving no matter what penalty they receive.

One exception to this rule was found in relation to good behaviour bonds. Though the evidence was not conclusive, those put on the bonds with a monetary surety were found to have a relatively low reconviction rate, and this appeared to apply across the spectrum of offender types. The author recommended that this area should be the subject of further research.

Another effect of increased severity of drink-driving penalties may be a reduction in the likelihood of their application, due to various mechanisms such as Police officers being more reluctant to apprehend and courts being more reluctant to convict. Effects of this type have been identified in North America (Ross 1981, Vingilis et al 1982). Following the approximate doubling of Victorian drink-driving penalties in 1978, there is some suggestion that magistrates have become more likely to admit evidence favourable to defendants (Santamaria 1983). The Victoria Police supplied data on 321 drink-driving charges where the defendant was assisted by an expert witness in Court. In 39% of the cases the accepted blood alcohol level was lowered so that a less severe penalty applied, and in a further 28% the level was lowered sufficiently so that the case was dismissed (Martin 1983).

In the absence of evidence that increased penalties for drink-driving offences would be effective in reducing road trauma, and the possible counterproductive effect of further increases, it is not possible at this time to endorse such proposals as being cost-beneficial.

## 7.7 REHABILITATION COURSES

Currently in Victoria, some convicted drink-drivers are referred (at the discretion of the magistrate) to a drink-driving course as a condition of relicensing. These courses are sometimes described collectively as "rehabilitation" courses though most are of the educational type.

The Victoria Police and magistrates proposed that there should be an expansion of these courses available in Victoria. The Police Surgeon submitted that attendance at a rehabilitation course should be compulsory following conviction for a second drink-driving offence or conviction for a blood alcohol level exceeding 0.15%. The RTA was more cautious and proposed evaluation and, if necessary, modification of existing courses in Victoria to make them more effective.

These proposals are clearly directed at the subsequent involvement in drink-driving accidents by convicted drink-drivers and aim to change their knowledge, attitudes and behaviour with regard to the offence. Like drink-driving countermeasures of the specific deterrent type (see Section 7.6), the maximum potential of rehabilitation courses is limited to an 8% reduction of total drivers killed (South 1982).

A comprehensive review of a decade of research into rehabilitation programmes in the United States found little evidence of effects on subsequent re-offence rates or accidents (Nicholls et al 1981). In fact, there was some evidence that "problem" drinkers exposed to drink-driving education programmes with large class sizes may be made even worse (Nicholls et al 1978). However, recent research indicates that an educative programme applied to first offenders can reduce re-offending (Reis 1982).

In Victoria, the educative programme for young convicted drink-drivers provided at St Vincents Hospital, Melbourne, has been the subject of a non-scientific evaluation (Raymond 1979). This study showed that while there were apparently some benefits in the form of reduced reconviction rates during the first two and a half years after completing the course, the benefits were lost at the end of a 3 year period.

However, there are some tentative suggestions that a carefully designed "weekend intervention programme" for problem drink-drivers can reduce re-offence rates and accidents (Siegal 1983). Such a programme appears to exist in Victoria at the Pleasant View Assessment Centre and is currently the subject of a scientific evaluation.

In the absence of evidence that existing drink-driver rehabilitation courses in Victoria are effective in reducing road trauma, and the possible counterproductive effect of inappropriate courses if provided to "problem" drinkers, it is not possible at this time to recommend that such courses be expanded or referral to them be compulsory. However, the evaluation of existing courses should be a priority area for research.

An additional potential benefit of the courses relates to early intervention and treatment of those persons susceptible to alcohol-related diseases of various types (Santamaria 1983). The effects of the Victorian drink-driver identification system and rehabilitation courses in terms of achieving that objective could not be assessed and the benefits could not be quantified.

## 7.8 LICENCE WITHDRAWAL

The Victoria Police submitted that a third conviction for a drink-driving offence should result in mandatory licence cancellation for ten years. The Police Surgeon proposed that permanent cancellation should be the consequence. The RACS

submitted that a driver convicted of a second drink-driving offence or of the offence of exceeding 0.15% should be required to obtain a medical clearance before relicensing.

Multiple drink-driving offences or blood alcohol levels exceeding 0.15% are considered by some to be indicators of "problem" drinking. Thus the proposals appear to be directed at the subsequent accident involvements of "problem" drink-drivers and aim to reduce or eliminate their exposure to the road traffic system.

The consultants are unaware of evidence that "problem" drinking is an indicator of increased likelihood of involvement in a drink-driving accident, though this may be the case. Since the proposals all rely on convictions for (multiple) drink-driving offences to identify "problem" drink-drivers, their maximum potential is limited to an 8% reduction of total drivers killed (South 1982) and perhaps considerably less.

Licence withdrawal is far from totally effective in preventing driving. A review of overseas studies found that between 32% and 68% of disqualified drivers drove at least once, and that this was more likely for longer disqualification periods (Robinson 1977). In Victoria, 36% of a sample of disqualified drivers admitted to driving, with over 40% of these subjects driving on more than 20 occasions (Robinson 1977).

However, there is evidence that licence withdrawal still has a substantial effect on the accident involvement of those disqualified. The Victorian study noted that those who did drive while disqualified reported that they believed they had driven more carefully (Robinson 1977). In addition, American studies have shown lower re-conviction and accident rates, in the short term, for disqualified drivers than those not disqualified and attending rehabilitation or education programmes. Although 70 - 80% of American drivers whose licences were revoked continued to drive, 20 - 30% did not and hence their crash risk exposure was zero (Nicholls et al 1981).

There is also evidence that licence withdrawal, compared with attendance at a drink-driver rehabilitation course without licence disqualification, has greater effects during the phase after licence restoration. Studies of these two treatments have found that multiple-conviction drink-drivers who had their licences withdrawn for periods from 12 months to 3 years had 30% - 50% fewer drink-driving offences and accidents in subsequent periods of up to 4 years (Janke et al 1978, Hagen et al 1981, Popkin et al 1983).

The above findings have led a number of American authorities to the recommendation that drink-driver rehabilitation courses should be provided as an addition to licence withdrawal in the case of drink-driving convictions, rather than as an alternative as used in many States (Coppin 1983, Presidential Commission on Drunk Driving 1983).

A long or permanent period of licence withdrawal for "problem" drinkers does not appear to be necessary, on the basis of the substantial effects which a medium period (say, 3 to 5 years) would have on their subsequent drink-driving. The opportunity to obtain a medical clearance from "problem" drinking is a fair and constructive incentive to earlier relicensing.

A major cost of a substantial period of licence withdrawal would be a loss of personal motorised mobility and perhaps some employment opportunities. However, the value of this cost to "problem" drinkers is unquantified.

On the basis of substantial reductions in the accident involvement rates of "problem" drink-drivers during and after a medium period (say, 3 to 5 years) of licence withdrawal, it appears that this variation of the proposals submitted would be maximally cost-beneficial and be optimal in terms of representing the minimum feasible cost of licence loss consistent with the road safety objective. A system of medical clearance from "problem" drinking would be an important refinement.

The programme could be fully operational in the short-term and appears to require new legislation as its basis.

#### 7.9 OPERATIONAL IMPROVEMENTS

A number of submissions proposed improvements to the existing drink-driving countermeasure system in Victoria with the aim of making it operationally more effective in achieving its intended objectives. The RACS submission was most explicit in this regard and included the following proposals:

- " It is recommended an appropriate amendment to the Motor Car Act be made whereby a person who challenges the accuracy of a breath test, shall be informed that he has the right to have a sample of his blood taken for analysis and that the result of such analysis when completed shall be made available to him and also to the police and may be used in evidence against him.
- . It is recommended that there be provided to the prosecutor by the defendant within 7 days of being charged, notice of his intention to call expert evidence challenging the accuracy of the BAL as measured by the Police stating the name of any expert who is to be called to give evidence and copies of any analyses upon which he intends to rely.
- . It is recommended that the two hour limit (for the taking of a blood test in hospital after accident involvement and for use as evidence against the driver) be extended to eight hours".

It is understood that the first two of these recommendations emanate indirectly from a Government committee established to review the procedures being accepted by some Courts to rebut the prima facie evidence of the Breathalyser.

A study of the drink-driving countermeasure system in Victoria, carried out on behalf of the Alcohol Countermeasures Sub-Committee of the former Road Safety and Traffic Authority (Hendtlass et al 1981), also produced a number of recommendations for operational improvements, as follows:

- " . In view of the fact that some offenders negate their evidentiary breath test by drinking alcohol after their screening test, the form of legislation existing in New South Wales and Tasmania which declares it an offence to alter one's blood alcohol concentration level before analysis should be adopted in Victoria.
  
- . A conviction for Refusing a Breath Test, which carries the highest minimum period of licence cancellation for drink-driving offence, should be considered to be a prior conviction for all drink-driving offences and the convicted driver should require a court order to be relicensed.
  
- . Although a conviction for Driving Under the Influence is deemed to be a prior conviction for one where a blood alcohol concentration of .05 g/100 ml was exceeded, the reverse does not apply. This legislation should be reviewed.
  
- . Considering the extended periods of licence disqualification currently imposed on offenders with multiple convictions at high blood alcohol concentration, and the number who apparently do not apply for licence restoration, referral to rehabilitation treatment should be at the time of conviction, not licence restoration.
  
- . In view of the difficulties in prosecuting drivers whose blood samples are taken more than 2 hours after the accident, consideration should be given to extending this period.
  
- . Legislation should be introduced to give police the power to

require a preliminary breath test from any driver who has committed a moving traffic offence."

The penultimate recommendation is essentially the same as the last proposal submitted by the RACS.

The consultants were not in a position to fully assess the benefits and costs of the eight different operational improvements proposed. However, each appears to contribute to improving the effectiveness of the existing countermeasure system. On the basis that each proposal is a recommendation from an in-depth Government inquiry, it appears that each would be implicitly cost-beneficial.

Each proposal could be introduced in the short-term and would require amendments to existing legislation.

## 8. SPEEDING COUNTERMEASURES

### 8.1 PUBLIC EDUCATION

The RTA and other submissions proposed that there is a need to increase public education on speeding, particularly of laws, safe practices and increased accident risk associated with speeding.

Speeding is a significant behaviour in the majority of fatal accidents. In approximately 23% of fatal accidents, one of the vehicles was exceeding the speed limit by 5-14 km/h, in approximately 19% a vehicle was travelling 15 - 24 km/h above the speed limit, and in 12% a vehicle was travelling more than 25 km/h above the limit (Cowley 1981). Speed may have been responsible for the increased severity of the injury sustained but whether it was the cause of the accidents can not be determined.

Research has shown that for rural highways the relationships between accident involvement and speed, and accident involvement and the deviation of speed from the average speed of traffic, take the form of U-shaped curves with involvement rates higher for very low and very high speed drivers and a minimum involvement rate at a speed marginally above the average speed. (Solomon 1963).

It has been found that the involvement rate increases by some eight times when the speed is 25 km/h above or below the average speed of traffic (West and Dunn 1971). At intermediate speeds there is little increased involvement in accidents.

The applicability of these relationships to Australia needs confirming in a research programme. However, the broad conclusion that the modification of the speed distribution so that large differences from the mean speed are decreased, would result in reduced accident risk, should be relevant to Australia.

It has been established in Sweden more than a decade ago that the severity of injury increases with increased crash impact speed (Bohlin 1967).

This relationship may not be directly applicable to Australian road conditions or vehicle design characteristics, particularly with respect to seat belt use and other crash injury countermeasures implemented in the last decade. Again, this relationship needs confirming for Australian conditions through detailed research, though the general principle is likely to still be relevant.

Therefore, there is a basis for public education regarding situations associated with increased risk of involvement and increased severity of injury.

Unfortunately, following an evaluation of the "Look out, radar is about" publicity campaign in 1982, it was found that in terms of vehicle speeds and perceived risk of apprehension it was not possible to detect any significant change during the study period. On this basis it was concluded that the campaign did not have any short term effect upon drivers' speed (Manders 1982).

However, it was pointed out that speed behaviour has been built up in Victorian motorists over many years and it may be unrealistic to expect one isolated three month campaign to have a great effect (Manders 1982).

On the basis of current knowledge, it appears that public education campaigns cannot be endorsed as a cost-beneficial countermeasure to unsafe speed behaviour. This does not mean, however, that education campaigns can not be an integral part of other speeding countermeasures (see Section 8.2).

## 8.2 GENERAL DETERRENCE

The RTA proposed that it is necessary to increase the visible enforcement of speed limits, particularly at times and locations of high accident occurrence. As an alternative, the RTA also proposed automatic cameras could be used for recording speeding offences. In each case, associated mass media publicity was recommended. The RACS supported programmes to develop a high perceived risk of detection when speeding.

As previously discussed, on rural roads there is evidence of a significant increase in the risk of involvement in accidents at speeds 25 km/h above the average speed of traffic, which in Victoria is approximately the posted speed limit, and there is evidence of increased severity of injury with increased crash impact speed. On urban roads there is no currently available evidence of increased risk of involvement in accidents for higher speeds.

General deterrence is the process of influencing a potential offender, through his fear of detection and the consequences, to avoid offending. This can only be achieved if the enforcement level is such that the risk of detection is perceived to be high, probably exaggeratedly so. This necessitates a high visibility profile for the enforcement agency.

General deterrence operations with increased enforcement of speed limits have been evaluated but generally studies have been related to enforcement of all offences. The results can be summarised as follows:

- . In California there was a significant decrease in the number of injury accidents but relatively little change in fatal or property damage accidents (California Highway Patrol 1969).
- . In New Zealand two short term blitzes resulted in injury accidents being reduced by one third and one quarter. These

blitzes had a lingering effect on accidents for two to six months after the programmes ceased (Toomath 1974, 1975).

In Western Australia detection of speeding by aerial patrols significantly reduced car speeds. The road markings used to time vehicles served as a reminder of the threat of detection and appeared to affect motorists' behaviour (Saunders 1978, 1979).

A general review of investigations of increased enforcement suggested that speed enforcement operations could reduce accidents (OECD 1974). The evidence, however, is relatively weak and it is not possible to indicate the exact effect of varying levels and methods of enforcement.

In view of this relatively minor or inconclusive effect of visible speed enforcement operations, and the short term and localised effect on speed behaviour, it has been questioned whether this type of operation applied generally is a cost-beneficial way of improving road safety (Sanderson 1982). However, if the enforcement is concentrated at locations of high accident occurrence, increased speed enforcement is likely to be cost-beneficial (see Section 4.3).

As with the installation of automatic cameras to detect traffic light offences, the use of modern equipment for recording speeding offences could augment the limited man-power resources of the Victoria Police.

Unmanned photographic systems have been developed in West Germany, The Netherlands, Switzerland and Japan (Glauz and Blackburn 1980). In these countries it has been common to install many vandal proof cabinets at various dangerous locations and rotate equipment between locations. West German evidence suggests that speeds have been reduced but there has been no investigation of possible accident reductions.

The Netherlands have developed a mobile unmanned photographic system. The evidence of the general deterrence effect of these units is unreported.

Because of the lack of evidence of the effects of automatic speed detection equipment on road trauma, it is not possible at this time to endorse the proposal as being cost-beneficial.

### 8.3 DETECTION AND APPREHENSION

It has been proposed that speed reduction could be achieved by an increased level of detection and apprehension of speeding motorists.

Traditional speed enforcement leaves little to remind the motorist when operations cease, so the effect is quickly lost. The potential effects of speed enforcement can be summarised as follows (Sanderson 1982):

- . A reduction of speed not only at the location of the enforcement but also both upstream, due to warning by approaching motorists, and downstream.
- . A reduction of speed on successive trips over the same length of road, due to the memory effect of the initial enforcement.
- . A general reduction of speed due to an increased perception of apprehension.

For a stationary enforcement vehicle, it has been found that the average speed of vehicles and the number of vehicles exceeding the speed limit are reduced and there is a possible decrease in the range of speeds measured. The downstream effect has been measured up to distances of 20 km although the majority of studies indicate it would be some 5 km. The upstream effect can be of a similar distance (Sanderson 1982). The memory effect

of a single radar check has been measured between 1 and 5 days whilst further radar checks increased the effective period to 8 days (Lewis 1976).

For a patrolling vehicle speeds have been found to decrease for a distance of some 5 km after overtaking the patrol vehicle. (Sanderson 1982).

No evidence has been found over a broad area or time from speed enforcement except for a intensified radar campaign with associated warning signs "Police - Speed Check Ahead" which had an extended time effect of 12 weeks (Eagle 1977). Presumably this was because the high visibility exaggeratedly raised the perceived risk of detection and produced a general deterrent effect.

Although increased speed enforcement operations have local effects on illegal behaviours, they have little or no effect on road trauma (Sanderson 1982). Therefore, as a road safety countermeasure, increased enforcement for detection and apprehension of speeding motorists does not appear to be cost-beneficial. From the Government's point of view, it may have other benefits in terms of revenue raising.

#### 8.4 SPECIFIC DETERRENCE

The RACS submission proposed that mandatory licence cancellation should follow conviction for exceeding any speed limit by 25 km/h. A Stipendiary Magistrate had a similar proposal, recommending a mandatory one month disqualification for excessive speeding.

These proposals appeared to be aimed at a specific deterrent effect by introducing the relatively severe penalty of mandatory licence withdrawal for serious speeding offences. Specific deterrence is the process of attempting to influence apprehended traffic offenders, through their actual experience of the consequences, from re-offending.

Another aim of the proposals could be general deterrence of excessive speeding, through fear of the consequences of detection.

During the period of the Inquiry, the Victorian Government implemented legislation making it mandatory for courts to suspend a person's driver's licence for a period of not less than one month, in addition to any other penalties imposed, where the person is convicted of exceeding a speed limit by 30 km/h. The legislation was implemented on 13 December 1983 and no evidence has yet emerged regarding its effects.

Since the new legislation is essentially the same as the two proposals to the Inquiry, an assessment of the expected cost-benefits of the proposals was not carried out.

#### 8.5 LOWER SPEED LIMITS

The RTA submission proposed a reduction in both rural and urban speed limits, although it would appear the reduction of urban speed limit referred to residential area speed limits so that there would be a speed differential between residential and arterial roads. The Victoria Police and other submissions supported differential speed limits, by type of road, in urban areas.

A review of changes in speed limits on rural roads in various European countries indicated the following overall effects:

- . Where speeds have been reduced by speed limits, there has been an accompanying overall reduction in accidents or casualties. This can be illustrated by a number of examples;

Country	Speed Limit (km/h)		Accident Reduction (%)
	Before	After	
Finland	100	80	-43
Sweden	110	90	-30
	90	70	-22
Denmark	90	80	-17
West Germany	None	130	-11

The Swedish data is important because it has been suggested that it may be the most appropriate country to parallel with Australian conditions (Cumming and Croft 1971).

- . In the few instances where speeds were unaffected there was no appreciable change in accidents.
- . Where a limit was removed, speeds and accidents both subsequently increased.
- . Accidents were not only fewer but were less serious with the limits in operation.
- . There were no indications in any of the investigations to suggest that the imposition of speed limits had, on average, led to increased accidents (OECD 1974).

One of the major problems with assessing the effects of these changes in speed limits was that the majority of studies considered short term changes only. Furthermore the studies did not report any parallel road safety activities which also could have influenced speed behaviour.

American experience with the introduction of the 55 mph speed limit was similar. In the initial two year period after implementation, there were significant improvements in road safety and speed compliance. Thereafter, the effects were eroded, although the fatalities and speed limit non-compliance were still well below that projected had not the revised speed limit been implemented (Johnson et al 1980).

It is difficult to determine how much of the accident reduction was due to the lower speed limit because several measures were introduced simultaneously, the most significant being the fuel crisis and associated increased prices (Federal Highway Administration 1976).

Experience in Victoria parallels this American experience. The reduced absolute speed limit in 1974 was accompanied by a casualty accident reduction of 10-14%, although this was State-wide and not only in high speed zones. In 1975 and 1976 the accident experience returned to normal levels, suggesting a one year influence only (Daltrey and Healey 1980, RoSTA 1978).

Vehicle speeds on rural roads showed a reduction in 1974 with a small increase in 1975 and a return to normal levels in 1976. These are inconsistent with the accident changes casting doubt on the conclusion that the reduction in casualty accidents in 1974 was due to reduced vehicle speeds.

There was evidence of reduced rural travel in 1974 (Cowley 1977) and also evidence of a reduction in occupancy of accident involved vehicles during the same year. These factors and inconsistencies make it difficult to conclude to what extent the 1974 accident reduction was due to the reduced speed limit.

The evidence suggests that reducing the speed limit and consequently vehicle speeds reduces accidents and consequent road trauma, even if only temporarily. However, there is some doubt as to the exact influence of the speed limit reduction because of other associated changes.

However, there is a substantial cost from reduced speed limits in terms of loss of mobility. To balance the road trauma benefits and the lost mobility costs of a given speed limit reduction, there is a need to consider a large number factors. The following factors have been suggested:

- . Accidents
- . Traffic flow
- . Drivers
- . Journey times
- . Fuel consumption
- . Automotive design
- . Road construction
- . Acceptance by the population
- . Police enforcement
- . Economy etc. {Lenz 1981}

There is a limited amount of quantitative data on which this procedure could be based. Therefore, this should be the subject of research before introducing reduced speed limits.

However, if it is considered that loss of mobility is an intangible cost of no great importance, then reduced rural speed limits would be a cost-beneficial road trauma countermeasure. Such changes could be implemented in the short term and would involve new legislation.

There has been little research to determine the relationship between speed and accident risk on urban roads and there is no evidence of a problem. There is a need to undertake research to determine whether such a relationship exists.

Even though a problem has not been established, reduced speed limits have been introduced experimentally in residential areas in Victoria. The 40 km/h experiment in Corio, Geelong, showed no significant effect on vehicle speeds unless physical traffic control devices were also implemented {McDonald 1981}. The 50 km/h residential speed limit in Preston produced similar insignificant results. Furthermore, police enforcement of the 50 km/h limit had discernible effect on residential street speeds {Ove Arup Transportation Planning 1983}.

Thus, lower speed limits on residential streets do not appear to be effective in reducing driving speeds.

Therefore, if a speed differential is to be established for residential and arterial roads, the speed limit on arterial roads would need to be increased. Since the effect of such an increase is unknown, it should be the subject of further experimental research.

## 9. SEAT BELT PROGRAMMES

Legislation is now in force in Victoria requiring all adult and child car occupants with an approved suitable occupant restraint available to wear it, with few exceptions. A survey in November 1982 showed that 99.7% of Victorian cars had seat belts fitted to the front outboard seats, and that over 90% had restraints (seat belts or child restraints) fitted to rear seats. Nevertheless, not all car occupants were restrained. Some 14% of children aged up to 7 years were not, as well as about 10% of older car occupants (Manders 1983).

### 9.1 INCREASED SEAT BELT USE BY ADULTS

The Royal Australian Nursing Federation (Victorian Branch) proposed increased enforcement aimed at seat belt non-wearers. The MAB submitted that there should be promotion of seat belt use in rear seats. The RACV proposed that a combined publicity and enforcement campaign aimed at young adult car occupants should be mounted.

These proposals are clearly directed at the injuries sustained by vehicle occupants involved in crashes and aim to change their attitudes and behaviours with regard to use of available seat belts. The proposals may also have the secondary aim of increasing seat belt fitting.

There is strong evidence that seat belt use substantially reduces the risk of death and serious injury in crashes (Milne 1979). This effect appears to be especially large for younger adult car occupants compared with older occupants (Cameron 1980). Vehicle occupants represented 64% of all road users killed and 73% of road users injured in Victoria during 1982 (RTA 1983e).

In November 1982, the usage rate of available restraints in rear seats ranged from 71% to 75%, depending on the particular seat, compared with 95% in the driver's seat and 91% in the front

left passenger seat (Manders 1983). In rear seats, the usage rate by young adults aged 18-29 was even lower than average, ranging from 59% to 62%. Similar low usage rates for occupants aged 14-17 were observed in rear seats. However, the front seat usage rate by young adults was no less than average.

Thus, a programme aimed at increasing seat belt use by rear seat occupants aged 14-29 would have substantial potential for behaviour change (ie, at least 35% are currently non-wearers) and would be focussed on the group with the largest potential benefits from each extra seat belt worn.

A combined publicity and enforcement campaign in Victoria during 1981 aimed at rear seat belt use approximately doubled usage rates and resulted in a 17% reduction in death and injury to rear seat occupants aged over 16 during the 6 months after the campaign (Lane et al 1983). A further campaign of a related type but focussed specifically on the 14-29 age group could be expected to achieve similar effects for at least this group.

During the first six months of 1982, a total of 269 rear seat occupants aged 17-25 were killed or injured in Victoria (Lane et al 1983). If the new campaign reduced road trauma to rear seat occupants of this age group alone by 17% during the subsequent 6 months, it would produce a saving to the Victorian community of at least \$1.1 million. Based on the previous one, such a campaign is estimated to cost approximately \$200,000 (Milne et al 1982).

Thus, it is apparent that a combined publicity and enforcement campaign aimed at rear seat belt use by occupants aged 14-29 would be cost-beneficial. The campaign could be implemented in the short-term and would not require new legislation as its basis.

## 9.2 INCREASED RESTRAINT USE BY CHILDREN

The RACV proposed that all children in cars should be required to be restrained by an approved child restraint device or an adult belt. In some cases, this would require vehicle owners to purchase or hire suitable restraints and fit them to seating positions which a child may use; currently children under 8 occupying rear seats are required to be restrained if a suitable approved restraint is available, but there is no requirement for a restraint to be made available (apart from the Australian Design Rule requiring adult belts to be fitted in rear seats of 1971 model cars onwards).

In its submission, the RTA described a basinet restraint hiring scheme which was introduced on a trial basis in the City of Knox and is currently being evaluated. Children under the age of 12 months are considered not to be safely restrained by an adult belt, whereas for older children this is acceptable (but not necessarily recommended) practice (Henderson et al 1976).

The RACV proposal is directed at the injuries sustained by child occupants involved in crashes and aims to provide a suitable approved restraint for every child occupant; existing legislation would require that each child uses the provided restraint. The RTA scheme, if available throughout the State, would be a useful adjunct in providing cheaper access to a suitable restraining device for the child age group for which the commonly available adult belt is not suitable (ie, children aged under 12 months).

There is evidence that child restraint devices are effective in reducing deaths and serious injuries in crashes. Recent comprehensive research in the United States has found that child safety seat users had 37% fewer injuries than unrestrained children (Kahane et al 1983). There is some evidence that adult belts may provide higher levels of protection to children than child seats (Knoop et al 1980), but this may only apply in American circumstances.

Children aged under eight represented about 4% of the total number of vehicle occupants killed or injured in Victoria during the first half of 1982 (Lane et al 1983).

In November 1982, the restraint wearing rate of children aged 0-7 was 86%. Where a child restraint was available, the usage rate was 97% (Manders 1983). Bearing in mind that only approximately 90% of cars had any type of restraints fitted in rear seats (where 94% of children aged under eight sit), the problem appears to be almost entirely one of restraint availability rather than restraint use.

There is an absence of evidence of the effects which could be expected from legislation of the type proposed by the RACV. Perhaps the closest analogy is the February 1974 legislation requiring the retrofitting of seat belts to the front seats of October 1964 to 1968 model cars (ie, those not covered by the relevant Australian Design Rule); this resulted in an estimated 6-13% extra cars with front seat belts available (Boughton and Cameron 1976).

In the consultants' opinion, legislation requiring that all children in cars should be restrained by approved child restraints or adult belts would be implicitly cost-beneficial. To minimize the cost to parents of children aged under 12 months, a basinet restraint hiring scheme of the type currently operating in Knox should be implemented throughout the State if found to be operationally feasible.

The legislation could be implemented in the short term. However, the basinet restraint hiring scheme would require a medium term horizon for full implementation; hence it is recommended that the legislation not be implemented until the hiring scheme is fully operational.

## 10. PEDESTRIAN PROGRAMMES

During 1982, the number of pedestrians killed on Victorian roads was 148, representing 21% of the total road user deaths. This proportion was relatively low by comparison with other recent years; pedestrian deaths represented 23% of the total in 1981 and preliminary figures suggest the same proportion occurred during 1983.

Persons injured as pedestrians have numbered around 2,000 per annum in recent years, representing about 10% of the total persons injured.

Relatively few submissions to the Inquiry proposed countermeasures to pedestrian trauma, in contrast with the number of proposals related to bicycling and motorcycling (Chapters 11 and 12, respectively). This could reflect the absence of an organised pressure group with the aim of improving the safety of pedestrians.

Submissions from the RTA, the Victoria Police and the RACS proposed increased use of various types of pedestrian facilities. These proposals are reviewed in Section 14.4 under road environment programmes.

The remaining submissions related to public education campaigns and enforcement of pedestrian regulations.

### 10.1 PUBLIC EDUCATION

The RACS recommended that on-going public education campaigns including the electronic media be commenced directing drivers' and pedestrians' attention to the pedestrian casualty problem.

The proposal is clearly directed at increasing the knowledge of drivers and pedestrians regarding circumstances of high pedestrian accident risk, with the aim of changing their behaviour to avoid those circumstances.

Relatively little is known about the circumstances of pedestrian accidents. An international review of pedestrian safety found an imbalance of scientific literature on pedestrian trauma compared with the vast number of publications on the safety of vehicles and their occupants (Foldvary 1973).

It is known that the young and the elderly are over-represented in pedestrian accidents involving death or injury. It is not clear whether this represents the inability of young children to cope with the road system or merely their greater exposure to the roads as pedestrians, in contrast with other age groups who are more commonly exposed as vehicle occupants. However, older persons appear to be over-represented primarily because of their greater susceptibility to serious injury in a given pedestrian accident (Jarvis 1978).

Another substantial group of pedestrians who have been identified as having a high accident risk are adult males who had been drinking (Haddon et al 1963, Clayton et al 1977, Blomberg et al 1979). A Victorian study found that 40% of adult pedestrians killed or injured at night had a blood alcohol level exceeding 0.15% (Jordan and Young 1982).

There is some specific research on the high risk circumstances of young and old pedestrians in New South Wales (Cameron and Milne 1978), but not in Victoria. Because of the relatively unique state of the Victorian road system with regard to pedestrian devices, there is a need for local research on pedestrian exposure-to-risk and accident patterns. Further research is also needed on the circumstances of accidents to drinking pedestrians.

In the absence of specific research, the proposed public education campaigns would be confined to general statements about pedestrian accidents and countermeasures. In a broader context, it has been well established that generalised appeals for safe behaviour are ineffective. Further, there is a danger that uncritical and widespread use of such publicity may have an adverse effect by making road users immune to better-based attempts to modify their behaviour (EGORS 1977). Public education campaigns should be addressed to a particular target group (of pedestrians) and include a specific, clear message regarding a desired behaviour change which is known to result in increased safety (Linklater 1980).

Due to the absence of specific research on which effective public education campaigns could be based, it is not possible at this time to endorse the proposed programme as being cost beneficial.

## 10.2 ENFORCEMENT OF PEDESTRIAN REGULATIONS

In its submission, the RACS proposed that "on-spot" fines be introduced and applied to pedestrians who ignore traffic control signals or jaywalk. The proposal appears to be aimed at simplifying current procedures for enforcement of pedestrian regulations.

This proposal is directed at reducing certain high risk pedestrian behaviours by increasing the deterrent effect of the Police and raising the perceived risk of apprehension among potential pedestrian offenders.

Some 21% of adult pedestrian casualty accidents in Victoria occur at traffic signals or pedestrian crossing (Jordan 1981). Per pedestrian crossing the road, the accident risks at these traffic control devices are considerably less than at uncontrolled road sections (Mackie and Older 1965, Cameron 1976, Institute for Road Safety Research 1977). However, pedestrians

who cross against traffic signals have 20 times the risk of those pedestrians who cross with signals (Cameron et al 1976). In addition, pedestrians who cross within 20 metres of a pedestrian crossing device have considerably inflated accident risks compared with those crossing in more distant road sections (Mackie and Older 1965, Cameron 1976). This latter pedestrian behaviour is illegal in Victoria.

Pedestrian prosecutions for traffic offences represent a very small proportion of the total (Pak-Poy and Kneebone 1980). In contrast, the extent of crossing against traffic signals is large, especially in the Melbourne CBD at the "Little" streets. Hence, it would not be practicable for the Police to apprehend all pedestrian offenders at traffic signals, even if "on-the-spot" fines could be applied. There would be a need for the Police to focus on those types of pedestrians and circumstances for which there is clear evidence of an inflated risk of pedestrian trauma. For the moment, the only clear evidence is that related to the young and the elderly, and to pedestrians at night as an indicator that they are likely to be intoxicated. More comprehensive evidence of high risk pedestrian types and circumstances in Victoria would be a product of the research recommended in Section 10.1.

In the consultants' opinion, the extension of the Traffic Infringement Notice system to cover pedestrians crossing against traffic signals, or within 20 metres of a pedestrian crossing device, would be an implicitly cost-beneficial countermeasure to pedestrian trauma, provided the Police focus their activities on high risk pedestrian groups, namely the young and the elderly and those crossing at night.

This could be introduced in the short-term by amendments to existing legislation.

## 11. BICYCLING PROGRAMMES

Although only 1.7% of all trips are by bicycle (Wigan 1982), and typically these are short trips, there are a significant number of bicycle accidents. About 30 bicyclists are killed per annum and this number has remained relatively constant, varying by no more than 14 deaths each year since 1966. During 1981, there were also about 1,100 bicyclists injured in accidents reported to the Police. This may not reflect the depth of the problem in that only 1 in 30 bicyclist injuries are reported (Geelong Bike Plan 1980a). The majority of bicyclists are under 18 years of age and this group represents almost 70% of bicycle casualties.

Since bicycle trauma represents 5% of the total road users killed or injured, it appears that bicyclists are substantially over-represented in serious accidents. Therefore, there is a need for increased attention to the safety of bicyclists.

Submissions relating to bicycle education and training in schools have been reviewed in Section 2.2 as part of pre-licence education, although it is recognised that such programmes stand alone as potential countermeasures to bicycle accidents.

### 11.1 BICYCLE HELMET USE

It has been recommended by members of the medical profession that compulsory wearing of bicycle helmets be introduced. Other submissions have suggested that to achieve greater helmet use there should be a subsidy on helmet purchase for school children. As an alternative to the introduction of compulsory wearing of helmets immediately, the RTA have proposed the promotion of helmet use with compulsion being introduced when there is an appropriate level of acceptance.

Research has shown that head injuries are present in 85% of fatally injured bicyclists and constitute about 35% of all injuries sustained by bicyclists (RTA 1983).

There is no doubt that widespread use of bicycle helmets would reduce the number and severity of bicyclist casualties. Currently, usage amongst children does not exceed 5% whilst for adult commuter cyclists it would be about 25% (RTA 1983a).

The major constraints on helmet use are:

- . Helmet availability; only two presently meet the necessary Australian Standard
- . Helmet costs; both helmets retail for about \$45
- . Acceptability; there is resistance to the wearing of bicycle helmets, particularly among children because of the lack of style and peer group pressure.
- . Facilities for storage are not available

Compulsory wearing of helmets would be a cost-beneficial road trauma countermeasure. Even though the cost of providing helmets would be in excess of \$5 million per annum (based on 120,000 new bicycles being sold every year, each with a helmet) the accident savings would be over \$20 million per annum. The cost to the Government of introducing the scheme would be minimal.

Although the countermeasure would be cost-beneficial, the RTA consider that immediate implementation is inappropriate and have suggested a programme to increase acceptability before introducing compulsory use.

The RTA suggests a staged programme of:

- . Compulsory use by adults on arterial roads (75% of bicycle accidents occur on these roads)

Compulsory use by children on arterial roads if helmet costs are reduced and there is increased acceptability.

Compulsory use by all on residential streets, only if approved helmet costs are reduced to a very low level.

In parallel to these stages a programme of bicycle helmet promotion is being planned. Ultimately the compulsory requirement for all children is dependent upon a certain level of acceptability. It is considered that when usage by children exceeds 30%, helmets would be sufficiently acceptable for a compulsory requirement to be introduced.

This staged programme of implementation of compulsory use is based upon known facts and would appear to be logical. However, it will require exact definitions of arterial roads if the use is to be enforced. Enforcement would be an essential element of the programme and this may create problems for the police. Rather than discriminate between arterial roads and residential streets, it may be more appropriate to implement a two staged programme, the first being compulsory use by adults and subsequently compulsory use by children.

The initial stages of the programme could be operational in the short term although the overall programme is obviously long term. The RTA considered it impossible to give a time scale for the implementation because of the uncertain nature of the helmet market and acceptability.

## 11.2 BICYCLE SEGREGATION

It has been suggested that because of the increased risk of injury to bicyclists there is a need to consider the segregation of bicycles from other vehicular traffic. This can be achieved either by bicycle lanes, bicycle paths or shared paths with pedestrians.

Studies have shown that a bicyclist involved in an accident has a four times greater chance of being killed and a 4.5 times greater chance of being injured than has a motorist. Whilst the annual percentage increase for all casualty accidents in Victoria has declined slightly since 1977 it has increased significantly for bicycle accidents. As a proportion of all casualty accidents, bicycle accidents have increased from 5.4% in 1974 to 8% in 1980 (State Bicycle Committee 1981).

Over the last five years a major thrust of the State Bicycle Committee's activity has been the preparation of the Melbourne Bikeplan and similar smaller scale plans for other areas. This work has been undertaken within a framework of the 4 E's approach to bicycle planning, namely engineering, education, enforcement and encouragement.

In terms of engineering its main objective is to implement physical improvements to create a safe and convenient cycling environment. The relevant engineering recommendations can be summarised as follows:

- . Improve the principal road network to achieve a safer integration of bicycles with other transport modes.
- . Establish a safe local area bikeway network to cater for local bicycle trips and to provide an alternative route of travel to the principal road system for the long-distance commuter.
- . Introduce traffic management measures to enhance the cycling environment within each residential precinct. (State Bicycle Committee 1981).

As with other engineering-based programmes, it is difficult to determine the benefit-cost of such measures as a programme, but it is assumed that each will be implemented only if providing a positive benefit-cost ratio.

The cost of the implementing the Melbourne Bikeplan recommendations would be approximately \$17 million dollars over a 10 year period. If the programme is to be cost-beneficial, it would need to reduce bicycle casualty accidents by some 5-10%. Whether this is achievable is not known because such measures have not been evaluated in accident reduction terms, but it would appear to be a realistic objective.

The provision of special segregated bicycle facilities is likely to be cost-beneficial since this should be one of the criteria met prior to implementation of individual locational treatments.

### 11.3 BICYCLING ON FOOTPATHS

At present, the use of the footpaths by bicyclists, other than designated shared footpaths, is illegal. There have been a number of submissions both for and against the use of footpaths by bicyclists.

There could be safety benefits if bicyclists were allowed to use the footpaths, especially for the young in residential areas, but against this must be considered the possible danger to pedestrians, especially the aged.

This is an emotive subject for which there is no proven argument. However, some areas, for example the A.C.T., allow cycling on footpaths except for specific areas, such as shopping areas, with apparently no detriment to pedestrians.

There may be a case for revising existing laws with respect to riding on footpaths, especially for the young. However, this must be considered in relation to pedestrian safety aspects. At this time it is not possible to endorse footpath riding for bicyclists as being a cost-beneficial road trauma countermeasure.

#### 11.4 ENFORCEMENT OF BICYCLE REGULATIONS

The Bicycle Institute of Victoria (BIV) has suggested that the existing accident facts constitute a prima facie case for actively enforcing bicycle laws, particularly lighting laws (Section 11.5), the introduction of auxiliary police bicycle patrols on the residential street system, and an increase in traffic police to remove dangerous drivers who cause many bicycle accidents. The BIV advocated a National Bicycle Study to develop bicycle education/enforcement policies.

Experience of many senior police in several countries has suggested that surveillance of children's bicycling habits, and the cautioning of child cyclists and their parents about their misbehaviour, is the most effective method of improving child cyclist safety (Wigan 1980). Unfortunately, the majority of the evidence is anecdotal.

The Geelong Bikeplan Law Enforcement Programme Trial I in which limited Police Bike Patrols were introduced, suggested that there was a considerable improvement in behaviour at the end of the period. It was recommended that if all uniformed members of the Police were involved in bicycle enforcement there would be a reduction in bicycle accidents and thefts (Geelong Bike Plan 1980b). This recommendation was accepted and Trial II was introduced to implement the programme along with Bicycle Offence Reports for bicyclists and motorists. This trial demonstrated that Police could readily provide an acceptable level of cyclist enforcement (Geelong Bike Plan 1980b).

The introduction of police bicycle patrols may have proven behavioural and implicit safety benefits. However, the cost of the necessary increase in manpower would outweigh the safety benefits. However, other community benefits may make the programme cost-beneficial. At this time it is not possible to endorse police bicycle patrols in residential areas as being a cost-beneficial road trauma countermeasure.

The National Bicycle Study would provide valuable information not presently available and would facilitate further consideration of this matter.

#### 11.5 ENFORCEMENT OF BICYCLE LIGHTING REGULATIONS

As part of the overall enforcement programme, the Bicycle Institute of Victoria have emphasised the need for the enforcement of bicycle lighting laws to reduce the occurrence of night time accidents.

Although there is a lack of evidence regarding the effects of presence or absence of bicycle lamps, it would appear that there is a problem resulting in more severe accidents at night. There is an over-representation of fatal accidents at night, 46 compared to 80 in daylight hours, whereas for non-fatal accidents there were 785 at night compared to 4087 in daylight hours (Triggs et al 1981).

The opportunities for high energy collisions between bicycles and vehicles may be greater in mid-block situations than at intersections, even though there are fewer conflict situations (Triggs et al 1981). At night this is further complicated by the fact that intersections have much better lighting than mid-block locations, where a motorist is less likely to see an unlit cyclist.

A survey of cycles around the University of Melbourne showed that 49% had no lights, 5% and 6% had a rear or front light only and 40% had both lights. The 55% having no rear light are in the gravest danger as being hit from behind at night is the single largest accident type for adults (Pedal Power, Victoria 1982). Therefore, there is a demonstrated need to enforce cycle lighting laws.

The cost of lighting to the individual would be \$10 per cycle for battery-powered lighting with some \$10 per year for batteries, or approximately \$25 for dynamo-powered lighting.

The benefits accruing from reduced accidents would be likely to offset the cost of providing the lighting units. However, if the cost of additional enforcement were considered the reverse would be true, costs would outweigh benefits. Therefore, it is necessary to increase the use of lighting with the existing enforcement personnel.

Prosecution of bicyclists for traffic offences currently presents a difficulty for the Police because of the need to summons offenders. If those offences for which there is clear evidence of an increased risk of bicyclist trauma could be covered by an extension of the Traffic Infringement Notice system, increased enforcement could be implemented more readily.

At this time the only clear evidence is that related to bicycle lighting offences. However, there could be other offences which would become evident from research into bicycle accident patterns.

Increased emphasis on enforcement of bicycle lighting regulations could be implemented in the short-term and would not require new legislation, unless the offences were covered by an extension to the Traffic Infringement Notice system. In the consultants' opinion, the extension would be an implicitly cost-beneficial operational improvement.

## 12. MOTORCYCLING PROGRAMMES

During 1982, the number of persons killed on motorcycles was 82, some 12% of the total fatalities on Victorian roads. Of persons injured, motorcyclists represented 9% of the total and numbered around 1,950 injuries during 1981.

Various studies have shown that motorcycling is a high risk mode of travel, finding that the motorcyclist casualty rate per kilometre travelled is 12-31 times that of car occupants (Johnston et al 1976, Goodwin and Hutchinson 1977, Haddon and Baker 1980, Broeg 1981, Swann 1982a). Motorcycles represented only 3.4% of vehicles registered in Victoria during 1982, in distinct contrast to the proportion of deaths and injuries involving these vehicles.

Submissions relating to pre-licence motorcycle rider training, licence testing, and graduated licensing have been reviewed in Chapter 3. In addition, many other proposed countermeasures aimed at drivers of four-wheeled vehicles are equally relevant to motorcyclists.

### 12.1 IMPROVED MOTORCYCLE CONSPICUITY

Improving the conspicuity of motorcycles and motorcyclists was addressed in several submissions. Essentially, two variations were proposed:

- . Compulsory day-time headlamp use for motorcycles (either by legislation compelling this or "hard wiring" of motorcycle headlamps to the ignition system);
- . Compulsory use of reflective vests by motorcyclists.

All countermeasures proposed in the conspicuity area aim to increase the conspicuity of motorcyclists on the road thereby decreasing the accidents/collision involvement of motorcycles with other vehicles.

Analysis of motorcycle collisions in the United States and Australia has shown conspicuity, or the lack of it, to be an important factor in motorcycle-car collisions (Vaughan 1976, Williams and Hoffman 1977, and Waller et al 1981). Motorcycles are involved in approximately eight times as many casualty accidents per kilometre travelled as are motor cars (RoSTA 1982b).

The most common form of motorcycle-car collision is where another vehicle turns across the path of a motorcycle (Williams and Hoffman 1977). In such circumstances, the drivers of motor cars simply do not "see" a motorcycle or "see" it too late to avoid a collision. It is not surprising, therefore, that in some 75% of reported motorcycle-car collisions the motorcycle had legal right of way (Williams 1976; Griffin 1974).

It is estimated from Australian research that at least 21% of motorcycle multi-vehicle accidents have a lack of visibility as a causative factor (Williams and Hoffman 1977).

United States research has shown daylight headlamp use (modulating or fixed) or the use of running lights (i.e pairs of amber/yellow running lamps fitted to the front and rear of motorcycles) to effectively and significantly increase motorcycle conspicuity (Tratner 1980; Olsen et al 1980). Fluorescent vests (alone), though increasing conspicuity, were not as effective as the daylight use of headlamps or running lights. The most conspicuous combination was where the motorcycle headlamp was lit in daylight and the motorcyclist wore high visibility clothing.

Evaluation of compulsory daylight headlamp use in North Carolina showed a decrease of more than 18% in daylight multi-vehicle collisions involving motorcycles (Waller and Griffin 1981).

The major disbenefit of compulsory headlamp use in daylight would be the cost to the motorcyclist. Research in New South Wales estimated that daylight headlamp use would cost

motorcyclists approximately \$8 per annum in bulb and other electrical component replacements/maintenance (Croft 1980). Thus, the annual costs to Victoria's 82,110 registered motorcycle owners (Transport Regulation Board 1983) would be approximately \$656,880.

There is some suggestion that the electrical systems of some motorcycles, particularly those with engine capacities below 150 cc, may have insufficient electrical capacity to enable headlamps to be lit at all times (Croft 1980, Sator 1982).

American research has shown that modulating headlamps or running/riding lights, though equally as conspicuous as fixed beam headlamps, draw much less power from motorcycle electrical systems thereby increasing electrical component life and decreasing the costs to the motorcycle operator (Tratner 1980).

If a greater than 18% reduction, in frontal aspect collisions, which account for at least 21% of all motorcycle collisions, could be achieved in Victoria, an overall reduction of at least 3.8% could be expected in the motorcycle multi-vehicle collision casualty rate. Noting that the majority of motorcycle casualty accidents involve major injury, this would represent a net saving of approximately of \$2.25 million per annum at least.

This figure is conservative as it is based on average road casualty costs. Motorcycle casualty accidents are generally more severe than those involving motor cars and are therefore more costly overall (MAB 1982).

Therefore, the use of motorcycle headlamps during daylight would be cost-beneficial as a road trauma countermeasure for motorcyclists.

In regard to acceptability, some influential Victorian motorcycling groups (e.g; the Motorcycle Riders Association ) have generally been opposed to improved conspicuity measures

which involve compulsion (e.g; lights-on legislation), mainly on civil liberties rather than road safety grounds, and have mounted opposition campaigns (e.g; "let those who ride decide" campaign) against any proposal to introduce lights-on legislation (MRA, 1983). Similar opposition has been encountered in New South Wales where a 1979 survey of attitudes towards compulsory daytime lights-on found 56% of motorcyclist respondents supported lights-on, but not compulsory use (NRMA 1983).

Therefore, while increased conspicuity measures for motorcycles would be cost-beneficial as road trauma countermeasures, further public education would be necessary to increase acceptability before the introduction of any legislative means to enforce increased conspicuity measures for motorcycles. A programme of public education leading eventually to legislation could be carried out in the medium term.

## 12.2 IMPROVED PROTECTIVE CLOTHING FOR MOTORCYCLISTS

The Royal Australian Nursing Federation (Victorian Branch) and the MRA proposed that greater attention and publicity be given to the need for motorcyclists to wear appropriate protective clothing in order to reduce or minimise injury in the event of accident.

Research shows that the most common injuries sustained by motorcyclists in road accidents are lacerations, contusions and abrasions (MAB 1982, 1983). This is to be expected as motorcyclists are relatively unprotected in the event of accident and therefore prone to injuries of at least this severity should they be involved in an accident or collision.

Recent Scandinavian research has shown that the wearing of protective clothing - particularly leather gloves, trousers and jackets, and to a lesser extent heavy leather boots - significantly reduces soft tissue injury among motorcyclists involved in road accident (Aldman et al 1981, Feldcamp 1976,

Engstrom 1979). This research also suggests that injuries received where protective clothing is worn tend to be less severe, e.g; fractures may be closed rather than open or complicated.

The wearing of appropriate protective clothing by motorcyclists may be discouraged by the high cost of leather protective clothing. For example, the purchase of leather gloves, boots, trousers and jacket, or full leather overall, would cost at least \$360.00 retail (based on a survey conducted 7th September, 1983). The purchase of only leather gloves and leather trousers, which were identified by Scandinavian research as the most necessary articles of protective clothing for motorcyclists, would cost at least \$134.00 retail. The high cost of protective clothing was particularly noted by the MRA in its verbal evidence to the Inquiry (MRA 1983).

If each rider of Victoria's 82,110 registered motorcycles was to purchase only leather motorcycle gloves and leather trousers (in addition to an approved helmet), a total cost of approximately \$11 million would be incurred. This cost must be set against the saving of approximately \$11 million dollars (in medical costs) if every laceration, abrasion or contusion injury resulting from motorcycle accident was eliminated in a twelve month period (MAB 1982). At face value, this implies that as an injury mitigation countermeasure, protective clothing for motorcyclists "breaks even" after 12 months. However, cost-savings may actually exceed the estimated figure as injuries resulting from motorcycle accidents in Victoria are twice as likely to result in serious injury as those resulting from accidents involving passenger cars only. This assessment is supported by Scandinavian research which suggests that protective clothing for motorcyclists mitigates injury severity in the event of accident (Engstrom 1979, MAB 1982).

Therefore, a requirement for motorcyclists to use leather gloves and trousers is likely to be a cost-beneficial injury countermeasure. Since there is no apparent strong philosophical

objection to such a requirement among motorcyclists, a public education campaign to increase acceptability would not be needed and hence appropriate legislation could be introduced in the short term.

### 12.3 MOTORCYCLE HAZARD SIGNS

In its submission to the Inquiry, the MRA recommended that special "Motorcyclists Beware" signs be erected at road locations which present a particular danger to motorcycle riders.

Though much is known about warning (advisory) sign design, little is known about the effects/influences of such signs upon road user behaviour (Johnston 1982, Dewar 1979). In many cases it is assumed that a well-designed sign will elicit the desired response from the road user, but there is little empirical evidence to support such an assumption (Johnston 1982). As a corollary of this, it cannot be assumed that the erection of "Motorcyclists Beware" signs would necessarily lead to increased caution on the part of motorcyclists travelling on road sections where such signs were posted.

Research suggests that signs should be kept to a minimum as increased sign quantity or frequency, particularly where a number of signs are displayed at a single location or in close proximity to each other, can overload the information processing capacity of the road user, leading to confusion or failure to perceive some of the signs displayed (Johnston 1982).

Rather than erect motorcyclist warning signs at hazardous locations, it may be more prudent to identify the hazards present and investigate their removal/mitigation by engineering means. Such an approach may improve a particular road location for all road users.

Given that a clear link cannot be demonstrated between the erection of warning/advisory signs and the modification of road user behaviour, the erection of "Motorcyclists Beware" signs at locations deemed to be hazardous to motorcyclists cannot be endorsed at this time as being cost-beneficial.

Further research into the effects of warning/advisory signs on road user behaviour would seem to be warranted.

#### 12.4 INCREASED DRIVER AWARENESS OF MOTORCYCLES

The MRA proposed that public education campaigns should be conducted to increase driver awareness of motorcycles on the roads. On the same theme, the MRA also proposed that "motorcycle awareness" should be an integral part of the car licence test, and that "I did not see the motorcyclist" should be an admission of guilt rather than a defence in prosecutions following car-motorcycle accidents.

These proposals are clearly directed at reducing crashes between motorcycles and other vehicles, and aim to increase drivers' knowledge regarding the circumstances of such crashes.

Studies have found that in some 75% of reported motorcycle-car collisions the motorcycle had legal right of way (Williams 1976, Griffin 1974). Low motorcycle conspicuity has been identified as an important cause of such collisions, being present in at least 21% of cases (Vaughn 1976, Williams and Hoffman 1977, Waller et al 1981).

Some 75% of Police-reported motorcycle accidents involve collisions with cars (RoSTA/MRA 1981). However, many single-motorcycle injury accidents are not reported to the Police (Premiums Board of Tasmania, undated), so the proportion of motorcycle-car collisions is less than 75% of all motorcycle injury accidents. Claims to the "no fault" injury compensation scheme operated by the Motor Accidents Insurance Board in

Tasmania indicated that motorcyclists were completely without fault in 10% of their claims, and an additional 30% involved shared responsibility (Premiums Board of Tasmania, undated).

These figures indicate that the potential for a reduction in motorcyclist trauma by increasing knowledge of and compliance with legal priority rules in motorcycle-car conflicts is not as great as some envisage (MRA 1983).

During the period of the Inquiry, the RTA in association with the MRA conducted a public education campaign with the theme "Look right. Look left. Look bike". This campaign was based on television publicity developed in Great Britain, and also used in New Zealand, with the theme "Look once, look twice, think bike". No evaluation of the effects of this publicity on motorcyclist trauma has been reported from either of these countries. Research should be carried out on the effects of the motorcycle awareness campaign in Victoria.

In the absence of evidence that programmes to increase driver awareness of motorcyclists are effective in reducing motorcyclist trauma, programmes of this type cannot be endorsed at this time as being cost-beneficial.

## 13. VEHICLE PROGRAMMES

### 13.1 OCCUPANT PROTECTION MEASURES

Improved protection for vehicle occupants was proposed in some submissions. The RACS called for air bags to protect occupants in front seats, as well as for improved side impact protection for occupants generally. The RTA also saw a need for improved side impact protection, and upgraded seat belt performance. Another submission called for helmet use by vehicle occupants.

Vehicle occupants represented 64% of road users killed and 73% of road users injured in Victoria during 1982 (RTA 1983e). Data shows the importance of head injury to vehicle occupants with neurotrauma being responsible for 67% of the deaths of car occupants and for a significant number of car occupants being admitted to hospital (Selecki et al 1982).

Although the use of air bags as a means of reducing injury to vehicle occupants has strong support, a crude cost-benefit analysis suggests that the cost of compulsory air bags would be about twice the savings (Lane 1982).

The Federal Government's Advisory Committee on Safety in Vehicle Design (ACSVD) has reviewed this proposal, and in addition to questioning the relevance and economic validity of air bags for Australian vehicles, noted that in a situation where some vehicles had air bags and others did not, there could be an increase in occupant injury rates if occupants began to rely on air bags and neglected to wear seat belts.

ASCVD, which has now been replaced by the Vehicle Standards Advisory Committee (VSAC), plans an investigation of measures to improve occupant protection in respect of head injuries, as part of its forward work programme.

Because the vehicle industry is international, it is difficult for unique requirements to be introduced in Australia. One of VSAC's functions is to actively pursue harmony between Australian motor vehicle rules and the main body of European regulations.

Another of VSAC's functions is to consider the need for regulations in the area of road safety. In view of the high proportion of vehicle occupants sustaining head injury in accidents, this topic should be high on VSAC's work programme. Because of the constraint on introducing unique Australian rules, the appropriate action would be for VSAC and the Office of Road Safety to pursue Australian proposals through active participation in the European rule-making forum.

### 13.2 SAFETY IN FORWARD CONTROL PASSENGER VEHICLES

In recent years increasing use has been made of small vans and omnibuses (known as Forward Control Passenger Vehicles, FCPV) as passenger car substitutes. The principal reasons for this are:

- . Larger families seeking an alternative to the standard five seating position passenger car, and
- . Lower cost of these vehicles because of lower import tariff, absence of import quota on this class of vehicle and fewer in-built safety standards.

Most FCPV are currently classified as multi-purpose passenger cars and consequently are subject to the majority of normal passenger car rules, the major exceptions being those related to steering columns, side door strength and child restraint anchorages (no country has design requirements for these three characteristics in relation to FCPV).

This matter has been under review through the Australian Transport Advisory Council (ATAC) and a programme for the amendment of Australian Design Rules (ADR) (or development of new ADRs) to extend the applicability of the Passenger Car ADRs to FCPVs is being developed by VSAC. It would appear to be implicitly cost-beneficial for the Victorian Government to support such amendments to the ADR requirements.

### 13.3 COMPULSORY PERIODIC VEHICLE INSPECTION

A number of submissions proposed that all vehicles should be inspected periodically for roadworthiness. The RACS proposed that this should apply only to vehicles over 3 years old and a private individual suggested applicability for vehicles 12 years and older.

This proposal is directed primarily at reducing accident involvement on the assumption that the risk of accident would be greater for a badly maintained vehicle than one in good condition and that inspection will result in improvement in mechanical condition.

In-depth studies suggest that the percentage of vehicles involved in accidents with mechanical defects contributing to the accident ranges up to 24.4% (O'Sullivan 1981). In many accidents, combinations of factors contribute to the accident (Treat 1977). In some reports, vehicle factors contributing to accidents include both vehicle design and vehicle maintenance factors (Mackay cited by O'Sullivan 1971), only the latter of which may be affected by compulsory inspection.

Vehicle factors have been nominated as causes "definitely" in 4.5% of cases and "probably" in 12.6% of accidents investigated in Indiana (Treat 1977). However, two in-depth studies in Australia found vehicle defects in cars "highly probably causative" in 1% and 1.2% of cases, and "possibly" causative in 5.3% and 5.4% of cases, respectively (McLean et al

1979, Health Commission of Victoria 1978}. The Australian results suggest that the potential for reducing the numbers of crashes through detection and rectification of vehicle defects is small in this country.

Doubt has been cast on the reported studies which attempt to show the effect of compulsory annual vehicle inspections on road accidents. However, assuming that 3% of accidents could be prevented if vehicles were inspected annually (VACC 1983), the saving to the Victorian community would be \$15 million per annum. There may be other non road safety benefits resulting from extended service life of vehicles and lower operating costs following annual inspection, but this is unlikely as the determinants of vehicle service life are body, engine and power train condition, which are items not usually subject to compulsory annual inspections.

The costs to individuals of compulsory inspections are estimated at a \$16 inspection fee (VACC 1983), \$16 for repair, plus a component for the value of time lost whilst inspection/repairs are arranged/carried out. Ignoring the latter cost, for a vehicle fleet of 2.1 million, total cost of compulsory vehicle inspections would be some \$56 million per annum, allowing for repairs which would be required under the current inspection programme. However, it should be noted that some 700,000 vehicles' registration are transferred annually (Transport Regulation Board 1982) and, therefore, one in three vehicles is already inspected annually.

With a net benefit of \$15 million per annum compared with a cost of \$56 million per annum, a programme of compulsory annual inspections for all vehicles would not be cost-beneficial.

There is some evidence that the probability of an accident-involved vehicle 8 years of age or older being nominated for a causative vehicular problem is more than twice as great as that for vehicles in general (Treat 1977). Some 46% of vehicles on the Victorian register are over 8 years old (Australian Bureau of

statistics 1982), and some 40% of vehicles this age are involved in accidents (McLean et al 1979). Assuming a 6% reduction in accidents, the estimated annual costs and benefits from annual inspections of these vehicles would be \$25 million and \$12 million, respectively, which indicates that annual inspection of these vehicles would also not be cost-beneficial.

#### 13.4 RANDOM CHECKS OF VEHICLE SAFETY-RELATED CONDITION

The Victoria Police currently operate an enforcement programme of random tests which involves stopping vehicles for some or all of the following:

- . To identify unregistered vehicles,
- . To identify unlicensed drivers,
- . To examine what may appear to be an unroadworthy vehicle, and
- . To assess drivers with alcohol above the prescribed limits.

The RACV proposed that random checks of tyres be undertaken by the Police to identify vehicles with high accident potential. The RACS proposed that random roadworthiness checks be undertaken by Police and Parking Officers. The latter effectively occurs now with Police.

Random checks of tyre condition is directed at reducing accident involvement on the assumption that the risk of accident is greater for a vehicle with inadequate tyre tread depth.

The two Australian studies indicate tyre defects could be almost up to half of relevant vehicle defects contributing to accidents. Assuming that 1% of accidents would be prevented if tyres were subject to random inspections, the saving to the Victorian community would be \$5 million.

On the basis that a tyre life would be 40,000 - 45,000 km, each vehicle should be spot checked once in three years. With 2.1 million vehicles on the register, up to 700,000 should be inspected each year, requiring some 70 inspectors at an

approximate cost of \$1.4 million per annum. Suitable publicity of the inspections may reduce the number of inspectors required and therefore the cost.

It is estimated that up to 27% of vehicles have a tyre with a tread depth less than 1.5mm, and that 17% have effectively zero tread (Health Commission of Victoria 1978). For a tyre cost of \$50, and assuming 1 in 8 vehicles would have travelled a further 10,000 km before tyre replacement in the absence of random inspections, the total additional cost to consumers per year would be approximately \$4 million.

Since the estimated benefits of a programme of tyre checks are approximately the same as the likely maximum cost, it is likely that it would be cost-beneficial as a road accident countermeasure. The programme could be implemented in the short-term and would not require new legislation as its basis.

### 13.5 UPGRADED TYRE STANDARDS AND PUBLIC INFORMATION

In June 1980, the House of Representatives Standing Committee on Road Safety (HRSCRS) conducted an inquiry into tyre safety. A number of submissions referred to the subject matter of the HRSCRS Inquiry either directly or indirectly. The recommendations of that Inquiry relating to vehicle standards have either been implemented in Australia or are the subject of further investigation through ATAC advisory committees and the Office of Road Safety.

However, one recommendation of relevance to Victoria concerns tread depth. The current Victorian minimum tread depth standard is zero tread depth at some point on the tyre. The ATAC Draft Regulations specify a minimum legal tread depth of 1.5mm. The Australian Design Rule for Passenger Car Tyres and the Australian Standard for new and retreaded tyres all require the tyre to include a treadwear indicator to show when the remaining tread depth is a nominal 1.5mm.

Evidence summarized in the HRSCRS Report (HRSCRS 1980) discusses the basis of a minimum 1.5mm tread depth in terms of relative accident risk, tyre disablement, wet skid resistance and aquaplaning.

A Victorian survey found that 27% of vehicles had at least one tyre with a tread depth of less than 1.5mm (Health Commission of Victoria 1978) and that there was an over-representation in accidents of vehicles with a tread depth below 1.5mm. However, as reported in Sections 13.3 and 13.4, vehicle defects in general, including tyre defects, contribute to very few accidents. The cost of introducing a 1.5mm minimum tread depth in Victoria would be more than twice the benefits assuming a 1% reduction in accidents. Hence, this recommendation cannot be endorsed at this time as being a cost-beneficial accident countermeasure.

#### 13.6 INCREASED CONSPICUITY OF VEHICLES

A number of submissions proposed means to improve the conspicuity of motor vehicles, particularly by:

- . Regulating the colour of vehicles to prohibit those colours with a higher probability of being involved in accident.
- . Using Daytime Running Lights (DRL), by wiring either headlights or parking lights to the ignition.

These proposals are directed at reducing accident involvement on the basis that good conspicuity would improve a road user's ability to estimate the location and direction of travel of vehicles.

Whilst there is some evidence to indicate that the occurrence of accidents could be reduced by using light paint colours (Hoffman 1973), other Australian evidence does not clearly support this theory (Health Commission of Victoria 1978). This matter warrants more research.

The use of DRL would be expected to reduce accidents occurring in daylight, except single-vehicle accidents. In 1981 multi-vehicle accidents between 6 am and 8 pm constituted 76% of casualty accidents (Swann 1982b). Assuming property damage accidents are in the same proportion, the annual cost of daylight multi-vehicle accidents in Victoria would be \$380 million.

A Canadian study suggested that using driving lights in daytime would cost an additional \$47 in electrical maintenance over 100,000 vehicle miles (Attwood 1981), representing a total cost of approximately \$10.5 million per annum in Victoria. It is estimated that DRL's would also increase fuel consumption by between 0.5% and 1% (Attwood 1981), the cost of which would be of the order of \$94 million per annum in Victoria.

Therefore, to be cost-beneficial, DRL would need to reduce daytime accident costs by some \$104 million per annum or 27%.

A number of studies report reductions in daytime multi-vehicle accidents of up to 38% (Attwood 1981, Anderson and Nilsson 1981, Rumar 1980), but some have methodological problems or involve countries where DRL use was already significant, thereby conservatively indicating the potential benefit.

Although this measure would not be considered proven cost-beneficial, it is a likely cost-beneficial countermeasure. Legislation requiring DRL could be implemented in the short term.

### 13.7 ADDITIONAL HIGH-MOUNTED REAR BRAKE LIGHTS

High, centre-mounted rear brake lights on passenger cars have been proposed as a means of reducing rear end collisions by providing a more effective indication to following drivers/riders that the brake pedal on the preceding vehicle has been depressed.

For the year ended 30th June, 1982, seven fatalities and 1,998 injuries were the subject of major injury claims to the Victorian Motor Accidents Board (MAB 1982) as a result of rear end impacts.

A number of trials of high-mounted rear brake lights have been conducted in the United States and reductions in the number of rear end collisions of up to 54% reported (IIHS 1978, 1980, 1981). Reduced repair costs for vehicles involved in rear end accidents have also been found.

In 1981, the cost of installing these lights was estimated at US\$4.45 to US\$5.21 per car and annual maintenance costs of US\$0.032 per car (NHTSA 1981). In Australia, the costs of a single light, and bulb replacement, have been estimated at approximately \$25 per ten years, if installed at the manufacturing stage.

Assuming all passenger cars in Victoria were equipped with these lamps and there was a 40% reduction in rear end accidents, the annual costs of this countermeasure would be \$4.25 million compared with benefits of \$19 million. Thus the introduction of high-mounted rear brake lights would be cost-beneficial.

This measure will become mandatory in the United States for all 1986 cars. The European rule-making organisation considered the subject in 1981 and felt that in principle these lamps could contribute to the improvement of road safety but only if there were correctly mounted and had appropriate photometric characteristics.

In Australia, the proposal has been considered by ATAC and its advisory committees. ACSVD's recommendation was that the optional use of additional high mounted stop lights not be discouraged. Now that the measure is to be introduced in the United States, the constraint of international uniformity has been overcome.

Introduction of this measure could be through the ADR system, requiring a 2-5 year lead time before implementation could commence, and a long-term period for "full" implementation until new cars become predominant on the road.

### 13.8 SPEED LIMITING DEVICES

Speed limiting devices have been proposed as a means of reducing accidents and accident severity. Variations of this theme include speed limiting devices for P-plate drivers, devices related to posted speed limits, devices set to 80 km/h, and "exceeding speed limit" lights on heavy commercial vehicles.

These proposals are principally directed at reducing energy build up and to a lesser degree at accident avoidance.

A comparative study of car-and truck-involved casualty accidents in Victoria in 1975-76 (Cowley 1978) indicated that approximately 1 in 4 accidents occur in areas to which the 100 km/h absolute speed limit applies. However, if speed limiting devices were set at this limit, it has been estimated that possibly only 7% of accidents would be affected and if a more realistic mechanical limit was set (eg, 20 km/h above the limit to allow safe execution of overtaking manoeuvres), only 1% of accidents would be affected. These estimates should be viewed as a maximum as it is not known to what extent the accidents or their consequences were dependent upon speed.

Speed limiting devices could have the considerable disadvantages, namely:

- . Prevailing conditions would often render a governed speed excessive;
- . Speed limiting devices would not be tamper-proof;
- . Overtaking manoeuvres would take longer;

Retro-fitting to the existing fleet would be impractical;

They would probably be an unpopular measure.

These disadvantages outweigh the possible advantages to such an extent that countermeasures of the types proposed cannot be endorsed at this time as being cost-beneficial.

### 13.9 REAR UNDER-RUN BARRIERS FOR COMMERCIAL VEHICLES

The fitment of rear under-run barriers to heavy commercial vehicles has been recommended in some submissions. Similarly, the fitment of side under-run barriers also has been recommended. Both measures are currently under active consideration by ATAC and its advisory committees.

It has been estimated that if the majority of heavy vehicles operating in Australia in 1979 and 1980 had been fitted with "moderate strength" type of under-run barriers, about 60 fatalities and 459 other casualties would have been avoided (Corben et al 1982).

If under-run guards were introduced on new heavy vehicles registered in Australia, it would take about 15 years for the whole fleet to have under-run protection. For Australia as a whole, during the first 14 years, about 210 fatalities and 1,608 other casualties would be avoided for a cost to the community of between \$63 million and \$87 million. This represents an average cost of between \$35,000 and \$48,000 to prevent each casualty. From the 15th year, when the benefit-cost ratio would be greater than one to one, 30 fatalities and 228 other casualties would be prevented each year at an annual cost of between \$5.2 million and \$7.0 million. This represents an average cost of between \$20,000 and \$27,000 per fatality and other casualties avoided (Corben et al 1982).

The introduction of under-run barriers would be a likely cost-beneficial countermeasure, but this programme needs to be implemented at the National level as an Australian Design Rule. Regarding the Victorian Government, the most appropriate action which is likely to be cost-beneficial in the long-term would be to support the implementation of the rule.

#### 14. ROAD ENVIRONMENT PROGRAMMES

Many submissions proposed improvements to the road environment with the aim of reducing accidents or their severity. Relatively few of these proposals would be cost-beneficial if implemented on the road system generally. Implementation of road improvement measures should take place at locations identified by a systematic Hazardous Road Location Programme.

A Hazardous Road Location (HRL) programme or, 'black spot' programme, can be defined simply as the identification of unsafe locations, either by accident numbers or accident rates, and the cost-effective treatment of such locations to reduce accident occurrence. Programmes of this type exist in Victoria, but at a relatively low resource level, and a number of submissions have identified the need to expand the programmes to ensure the early implementation of remedial treatments.

Traditionally, HRL programmes have been considered for urban and rural areas separately, because of the different levels of accident occurrence and the different types of problems and solutions. Similarly, in urban HRL programmes, intersections and sections on the main road network have been considered separately. Within these programmes the problems of hazardous roadside objects and pedestrian accidents have been identified as major causes for concern so these have become separate programmes.

In summary, particular programmes associated with hazardous road locations have been related to:

- . Urban Intersections
- . Urban Sections
- . Roadside Objects
- . Pedestrians
- . Rural Areas.
- . Residential Areas.

These programmes are directed at locations at which there is a concentration of accidents, generally of a similar nature so that one particular countermeasure can be effective.

Studies of the effectiveness of individual countermeasures have been undertaken, but evaluations of the effectiveness of whole programmes are rare. One evaluation particularly relevant to Victoria was that undertaken for metropolitan intersections in Adelaide. This study showed that for an implementation budget of \$0.5 million, the resultant benefits can be more than six times the cost, whereas an implementation budget of \$1.0 million can produce benefits almost four times the cost (RACV Consulting Services 1983).

An evaluation of rural road improvements in Kentucky concluded that the spot improvement programme had resulted in significant reductions in accidents and favourable benefit-cost ratios at locations where improvements had been made. Therefore, the overall programme had been cost-beneficial (Agent 1973).

A review of five studies of the cost-effectiveness of engineering countermeasures concluded that certain low cost remedial measures can be highly cost-beneficial in reducing accidents (Hills and Jacobs 1981).

Ideally, this conclusion would be typical of all HRL programmes. In a sense, they must be cost-beneficial since individual measures should be selected by the implementing authority only if the measures are individually cost-beneficial. If individual countermeasures implemented at identified locations are correctly selected on cost-benefit criteria, it follows that the programme is necessarily cost-beneficial.

Since the effectiveness of such programmes is dependent upon the individual countermeasures it is necessary to discuss these in detail. There are a large number of countermeasures which could be implemented and many were suggested to the Inquiry. The subsequent discussion is restricted to those measures which were

proposed for implementation or, for those already being used, for accelerated implementation.

#### 14.1 URBAN INTERSECTIONS

Approximately 70% of casualty accidents in Victoria occur in the Melbourne Statistical Division (MSD) and of these some 60% occur at intersections. Accident reduction at the intersections has been attempted by a continuing programme of installation of traffic signals, roundabouts, control signs, channelisation, traffic islands and other relatively low cost improvements. However, there is a need to continue the upgrading of existing facilities and their maintenance to ensure further accident reduction.

Submissions have concentrated upon the need to accelerate the programme particularly with respect to signal linking, modification of existing signal installations, provision of additional turning lanes and improved delineation through intersections, clearly with the aim of further segregating vehicles and considerably reducing conflicts.

Installation of new signals has shown an approximate 20% accident reduction potential (Nicholas Clarke and Associates 1981; Main Roads Department, Western Australia 1979). Signal linking has been shown to reduce accidents by a further 20% (Moore and Lowrie 1976) besides significantly improving traffic facilitation by reducing the number of vehicle stops, lowering fuel consumption, reducing journey times and increasing road capacity.

Modification of existing signal installations, either with or without channelisation, has been proven effective with a 15% accident reduction potential (Nicholas Clarke and Associates 1981).

Based on these percentage reductions in accidents, installation of signals and signal modifications could be justified as cost-beneficial road accident countermeasures. However, the cost of signal linking is such that it would not be justified on road trauma savings alone, although these may be a major component in the benefit-cost calculations of such treatments.

The addition of turning lanes has not been successful when measured in road safety terms. An evaluation of these treatments demonstrated a 2% accident reduction at the intersection but a 38% increase in accidents on approaches. Together these represent an overall 10% increase in accidents (CRB 1982).

Poor delineation and lack of signing of lanes at intersections has not been shown to be a contributor to accidents.

Nevertheless it has been suggested that safety bars incorporated into existing or revised intersection treatments would improve delineation and channel vehicles into the correct position on the road. This treatment has been used extensively in Adelaide and has been successful in that accidents have been reduced by 14% (Nicholas Clarke and Associates 1981). Safety bars have been used in Melbourne to delineate tram lanes. However, before greater use is made of safety bars, consideration should be given to investigating whether they increase danger to motorcyclists.

## 14.2 URBAN SECTIONS

Some 4,200 casualty accidents occurred at mid-block locations in the MSD during 1981. Although some of these were undoubtedly associated with adjacent intersections, were collisions with roadside objects, or were run-off-the road accidents, there remain a significant number which require consideration.

Solutions to the problem are limited, probably more so in Melbourne than other cities because of the need to maintain the right of way of trams clear of obstructions. However, submissions have suggested installing median strips on roads of sufficient width, improving signing to reduce the driver's visual task, and improving street lighting.

Providing a median strip could significantly reduce accident rates. Studies in Western Australia have illustrated accident rates per million vehicle-km for a divided road of 0.57 compared to 2.14 for an undivided road when traffic volumes are between 15,000 and 25,000 per day. For higher volumes the comparable figures were 0.90 and 2.04, respectively (Main Roads Department, Western Australia 1981).

The cost of providing a median strip, probably with associated road widening to maintain suitable lane widths, would suggest that such a countermeasure would not be cost beneficial on road safety benefits alone.

Improved signing, including standardisation of signs, whilst reducing the driver's visual task, also has reduced accident occurrence. Warning signs have been shown to reduce accidents by 14% in two lane roads and by 20% on multi-lane roads (Jorgensen 1966), directional signs have reduced accidents 30% and 40% on two lane and multi-lane roads, respectively (Jorgensen 1966), and road markings have reduced accidents by 15% (Brown 1972).

The low cost of signs and markings makes these countermeasures cost-beneficial. However, it may be desirable that there is not a proliferation of signs, as this could reduce their effectiveness.

Improved street lighting has been shown at some locations to reduce accidents by approximately 30% (Turner 1972). However, it is unlikely that a case for the justification of major lighting expenditure on the basis of cost savings in accidents alone can be made (Vincent 1983).

### 14.3 ROADSIDE OBJECTS

In the MSD during 1981, 10% of all casualty accidents involved vehicles running off the road and hitting a fixed roadside object, a further 2% ran off the road without striking an object, and 4% struck a parked vehicle. These two latter accident types are potential roadside object collisions.

In the remainder of the State, 35% of all casualty accidents involved running off the road, with 23% involving striking a fixed object.

The number of these accidents and the resultant injury severity have been highlighted in submissions from all the major road safety oriented organisations. Each submission proposed the need for an identification and improvement programme for hazardous roadside objects.

Research undertaken in Melbourne has provided a mathematical procedure whereby utility poles which are vulnerable to accidents can be identified (Fox et al 1979). There are some 800,000 utility poles in the Melbourne metropolitan area. Since 80% of all utility pole collisions are on the arterial road network, priority should be given to poles on these roads. This reduces the task to considering 100,000 utility poles (Fox et al 1979). This could be further reduced by initially concentrating on locations which have been identified as being associated with the collisions, for example on the outside of a bend.

The identification procedure has been applied to utility poles on Beach Road and Maroondah Highway. These investigations illustrated the accident reduction potential of a roadside objects programme by demonstrating benefits up to forty times the cost of implementation. The major benefits were gained by duplicate use of poles or minor remedial traffic management countermeasures. Relocation of poles, although cost-beneficial, did not produce such high benefits (Pak-Poy and Kneebone 1981).

The study recommended experimental investigations of different treatments along both roads. Unfortunately, due to lack of resources (RTA 1983d), these experimental investigations have not been implemented. It is essential that these experimental investigations are undertaken to determine the level of cost-benefits prior to implementation of the programme on other roads.

The RACV submission proposed that frangible or slip-base poles, which present a lower shear strength zone to errant vehicles whilst maintaining other strength requirements, may be applicable for luminaire poles.

Until recently the use of these frangible poles has been restricted in Victoria to freeways even though the effectiveness of installing slip-base luminaire poles has been demonstrated in South Australia. It was concluded that the societal cost of pole collisions were lower for slip-base poles than for rigid poles at no extra cost to authorities (Fox et al 1979).

The RTA proposed that there could be a role for crash cushions (sometimes called 'impact attenuating devices'). Although innovative in this country, they could provide protection for obstructions which cannot be relocated or protected by appropriate guard fence or barrier.

In urban areas, the remedial treatment of hazardous roadside objects by minor traffic management measures, or relocation of poles or replacement with frangible poles, would be cost-beneficial. Impact attenuating devices require further investigation.

In rural areas, the solutions may not be so readily available because many of the accidents are associated with trees rather than with roadside furniture. Different traffic management techniques may be more appropriate (Section 14.5)

It has been suggested that service poles be removed and that all services be provided by underground cables. The cost of undertaking such work in existing areas would be prohibitive, and this proposal cannot be endorsed as cost-beneficial.

#### 14.4 PEDESTRIANS

During 1982, 147 of the State's road fatalities, 21% of the total, were pedestrians, the majority of whom (115) were killed in the MSD. This high level of pedestrian fatalities is due to them being unprotected road users. It appears necessary to provide additional protection particularly for the highest risk "mid-block dart out" and "intersection dash" activities (Jonah and Engel 1983). Submissions have proposed a pedestrian safety facilities programme, particularly related to low cost measures, such as pedestrian fencing, refuges or road narrowing.

Traditionally, pedestrian conflict problems have been solved by the installation of pedestrian signals, either integrated with intersection signals or independent mid-block pedestrian-operated signals, or if adjacent to a school, by school crossings with or without a supervisor. Provision of the facilities, however, does not guarantee their use and many accidents occur in the immediate vicinity of pedestrian facilities (Pak-Poy and Kneebone 1980).

Thus, it appears that part of a pedestrian facilities programme should be aimed at increasing the use of the facilities by installing devices which channel pedestrian movements towards the facilities.

There has been little or no evaluation of such pedestrian measures when used in association with major facilities. However, it has been shown that pedestrian fencing can reduce accidents by as much as 75% (Brown 1972). Therefore, it would appear that pedestrian fencing is an implicitly cost-beneficial countermeasure.

One independent pedestrian facility worthy of consideration is the use of pedestrian refuges rather than formalised crossings. In Western Australia these facilities have been found to reduce a combination of pedestrian injury, driver injury and vehicle damage by 88% (Main Roads Department, Western Australia, 1977 and 1978). This would be a cost-beneficial measure at many pedestrian problem locations, but unfortunately its application is limited in Melbourne because pedestrian concentrations are often associated with tram routes.

The Metropolitan Transit Authority (MTA) has suggested a need to improve street lighting in the vicinity of tram and bus stops to reduce the likelihood of pedestrian/vehicle conflicts and a need for special markings at such stops.

The improvement of street lighting has been shown to decrease the pedestrian accident rate by some 50% (RRL 1963, Christie 1966). Therefore, it is likely that it is cost-beneficial and its increased use is endorsed. Floodlighting of tram stops and pedestrian crossings may be a cheaper alternative than general street lighting improvements. The value of special markings at tram and bus stops is unknown.

#### 14.5 RURAL ROADS

Rural roads have a significant number of accidents, approximately 30% of all casualty accidents, but the major problem appears to be the severity of accidents. During 1982, 345 fatalities, 49% of the State's total, occurred in the area of the State excluding the MSD.

Submissions to the inquiry have suggested a number of initiatives to improve rural road safety. The majority are recommending an acceleration in the implementation of existing treatments, namely:

- . Additional freeways/dual carriageways
- . Road widening
- . Overtaking/climbing lanes
- . Shoulder widening
- . Improved delineation
  - raised reflective pavement markers
  - edgelineing
  - corner cube delineators
  - yellow line marking.
- . Improved signing

Freeways and dual carriageways have a better safety record than two lane highways as illustrated by accident rates of 13 and 22 casualty accidents per hundred million vehicle kilometres for freeways and dual carriageways, respectively (Carter 1982), compared to a rate of 29 for two lane highways (Scott 1981). This can be further illustrated by the 70% reduction in the casualty accident rate when part of the Hume Highway was replaced by a freeway (CRB 1982).

However, the main advantage of freeways and dual carriageways is the facilitation of traffic and although time savings may justify a high grade road improvement, such facilities based accident savings alone would not be cost-beneficial.

Pavement widths of less than 5m have been shown to be a contributory factor to multi-vehicle accidents (Boughton 1975), therefore in such circumstances road widening is likely to be cost-beneficial. It has been shown that by minor road widening accidents have been reduced by some 35-45% (Jorgensen 1966, Guerin 1967).

However, because of the cost of road widening, it would only be appropriate as an accident countermeasure at high accident locations. It would not be cost-beneficial as a State-wide programme as suggested by some submissions.

Overtaking and climbing lanes have been introduced predominantly to remove slow traffic from the through lanes in undulating terrain, thereby reducing conflicts between slow and fast traffic. Generally, existing lanes have been implemented to improve traffic flow but at the same time they have been shown to reduce accidents by 25% in the case of overtaking lanes (Rinde 1977) and 15% for climbing lanes (Martin Vorhees Associates 1978). Neither of these figures take into account possible safety improvements on adjacent road sections by reducing bunching and unsafe overtaking. Additional lanes are expensive treatments but in appropriate locations would be cost-beneficial as a road accident countermeasure.

Widening of the shoulder, particularly on curves, provides additional space for errant vehicles to be brought under control. However, as accident reductions resulting from shoulder widening have been demonstrated to be only 5 to 15% (Brown 1972, Laughlan et al 1975), it is unlikely that such treatments would be cost-beneficial other than in exceptional circumstances.

Methods of improved delineation have been shown to be effective accident countermeasures:

Raised Reflective Pavement Markers (RRPM) have been shown to reduce head-on and single-vehicle accidents, which accounted for 70% of casualty accidents on rural roads in 1981, by 20% (CRB 1982). They have also been shown to significantly reduce erratic manoeuvres on low volume roads and allow smoother speed changes through curves (Mullowney 1982). RRPM have increased the effectiveness of centre lines in the wet (Hall 1979). When used with painted edgelines the combination provided optimal delineation (Hall 1979).

Edgelineing provides an additional sight-line on curves and helps to reduce run-off-road accidents, which accounted for 34% of casualty accidents in 1981. Investigations have shown accident reductions ranging from 15% on straight highway sections to 45% on curves (Jackson 1981).

Corner Cube Delineators have produced a 60% reduction in night-time accidents compared to a 21% reduction on control sections (RTA 1983).

Countermeasures of the delineation type have been proven to be cost-beneficial at hazardous road locations, and are likely to be cost-beneficial on curves, but not so on straight highway sections. Proposals to edgeline the whole of the rural network would not be cost-beneficial on accident reduction savings alone (ARRB 1983). It has been suggested that a wholesale edgeline of the rural road network may detract from its effectiveness on curves and at accident locations.

It was submitted that barrier centre lines should be highlighted by a yellow centre line preceding the barrier lines. There is no evidence that such a measure would be effective. However, because of the high risk associated with overtaking at such locations (Lohman et al 1976), the idea would be worthy of research and further consideration.

Trial installations of larger Give Way signs are presently being undertaken on rural roads.

#### 14.6 RESIDENTIAL AREAS

Unlike the concentration of accidents which qualifies locations for treatment in a Hazardous Road Location programme, accidents in residential areas are more diverse and countermeasures tend to be of a more general nature. Also, the accident problem is difficult to quantify as the problem contains a strong social element (OECD 1979).

However, in numeric terms the problem can be illustrated by the following:

An examination of accidents in the City of Nunawading showed

that 19% of all casualty accidents occurred on the local road network, and a further 35% occurred at local/arterial road intersections (Brindle 1983).

An assessment of accident rates per million vehicle-kms within the City of Sandringham showed a higher rate of 0.97 for local traffic areas compared to the 0.47 for arterial roads (Daff and Hua 1981). Older studies have demonstrated similar results (Harper 1970, Dalby 1979).

Submissions have proposed an alteration of local street intersection layout to deter non-local traffic from using the local network, or to control speed in residential areas, by the use of traffic management treatments such as the installation of roundabouts, signing, channelisation, or road humps. However, other submissions have argued for a restriction on the use of these control items in residential areas.

Data on the relationship between vehicle speed and accident rates in residential areas is sparse, although generally it is assumed that, all other things being equal, faster vehicles will tend to be more dangerous for pedestrians (Brindle 1983).

Although there is no established relationship, general speed limit changes have been introduced experimentally in residential areas (Section 8.5) and many speed deterrent devices have been installed. It has been shown that the latter have been successful in reducing speed (RoSTA 1981b), but there is no evidence that there has been a reduction in road trauma.

Before further resources are expended on speed deterrent devices in residential streets as a road trauma countermeasure, it is necessary to better establish the relationship between speed and accidents in such areas by research.

A submission proposed that all intersections should be signed so that motorists will always have a positive directive regarding priority, rather than the "give-way-to-the right" rule

and T-junction rule now applying at some intersections. These rules currently are operative essentially only at minor intersections in residential areas, and widespread replacement by priority signs would not be cost-beneficial.

## 15. SOCIAL ENVIRONMENT PROGRAMMES

An area which received considerable attention in submissions was that relating to post-accident emergency medical services, from initial intervention or treatment at the accident scene through to care in hospital casualty/emergency departments.

The submissions can be broadly grouped under three headings, i.e.,

- . Improvements to pre-hospital injury management
- . Upgrading injury treatment and management in hospital emergency departments, and
- . Establishment of an Emergency Medical System (EMS)

Submissions grouped under the first category included recommendations for first aid training for all drivers (or for drivers likely to encounter accidents), compulsory first aid kit carriage in motor vehicles, "samaritan" legislation, improved training for ambulance officers, increased numbers of mobile intensive care ambulances, improved ambulance transportation systems, and improved communications between on-site emergency services and hospital emergency departments.

In the area of injury treatment in hospitals, recommendations were made in favour of improved funding/staffing of emergency departments to improve the medical treatment of road accident victims.

The establishment of a coordinated emergency medical system (ie, a system to coordinate and control the delivery of emergency medical aid from the initial notification of the authorities through to hospital care and including medical oversight of initial treatment, communication with on-site emergency personnel, transportation, and hospital reception and treatment), in Victoria and particularly the Melbourne metropolitan area, is

recommended by those who see a need to coordinate emergency medical services at all levels to ensure efficient and effective response to all trauma, including that resulting from road accidents.

All submissions in regard to post-accident emergency medical services are aimed at reducing the immediate mortality/morbidity due to road trauma. Some submissions go on to suggest that the effective and efficient management of road trauma also acts to reduce the long-term period of post-accident rehabilitation for road accident victims (Burke 1983).

### 15.1 PRE-HOSPITAL INJURY MANAGEMENT

United States research has found that the survivability of road accident victims is directly related to the elapsed time, from time of accident to definitive medical care (Stephany 1976). This implies that improvement in the delivery of aid to road accident victims, either by rapid, efficient transport to hospital or effective treatment at the accident scene, should act to reduce mortality/morbidity among road accident victims.

Given that average ambulance response time in metropolitan Melbourne is approximately 8 minutes (approximately 30 minutes in Central Victoria) and that between 7% and 15% of road accident fatalities could be avoided by the administration of very basic, but immediate, first aid to injured victims by persons (lay or otherwise) in early attendance at casualty accidents, there is some logical support for first aid training for laymen drivers, since a layman is most likely to be the first person to happen upon the scene of road accident (Christie 1983).

Though estimates from medical or paramedical groups in Australia and West Germany (Australian Red Cross Society 1981, 1983; St John Ambulance Association 1981; Royal Australian College of General Practitioners (South Australia) 1981) suggest training of this nature should reduce post-accident fatalities,

little or no objective evidence exists to support it as a viable countermeasure (Christie 1983; RTA 1983).

The RACS in its submission to the Inquiry, as well as the recent interim report to the Minister of Transport on "Accident Management and First Aid at Road Accidents" (RTA 1983b), recommended the enactment of "Samaritan" legislation in Victoria. Such legislation, which has been enacted in various forms in Europe, Scandinavia, Queensland, and the USA, would give individuals voluntarily rendering first aid indemnity against legal action which may be taken by an accident victim. In support of samaritan legislation, it has been said that:

"... Legal protection for lay persons and medical doctors and nurses voluntarily rendering first aid might remove some disincentive for giving assistance and make people more willing to help at road accidents. More importantly the act of passing legislation could be used as a catalyst for increasing media and public awareness of the need for enhanced first aid and increased community commitment." (RTA 1983b, p4).

Though there would be no guarantee that the introduction of samaritan legislation would increase lay intervention at road accidents, there would seem to be logic in the belief that the removal of disincentives may increase the incidence of intervention. This, in turn, may lead to a reduction in post-accident fatalities or the mitigation of some non-fatal injuries among road accident victims.

Little cost would be attached to the introduction of samaritan legislation in Victoria. As a road trauma countermeasure, samaritan legislation could be classed as implicitly cost-beneficial. The legislation could be introduced in the short-term.

Though first aid kits must be carried in motor vehicles in West Germany, Norway, Sweden, Austria and other European and Scandinavian countries (in some cases this has been law for more

than a decade), there is apparently no objective evidence available to support the efficacy of such measures in reducing mortality or morbidity among road accident victims (Christie 1983). In a similar vein, there appears to be no empirical support for the provision of summarised first aid or medical information on driving licences or motor vehicle registration labels as a mortality/morbidity countermeasure.

The recent interim report to the Minister of Transport on "Accident Management and First Aid at Road Accidents" did not recommend the carriage of first aid kits in all motor vehicles nor the provision of first aid information on driving licences or motor registration labels (or the like), as neither initiative could be shown to be cost-beneficial (RTA 1983b).

Evidence suggests that treatment of road accident victims by paramedical personnel (trained in the treatment of trauma victims) at the site of an accident, combined with prompt transport to an appropriate hospital facility, in a suitably equipped vehicle (ie, approved to some uniform standard, as in the U.S.A.), can reduce post-accident mortality rates by approximately 10% (York County Study) (Ham et al 1980).

A submission to the Inquiry presented the findings of a recent Sydney-based ambulance paramedic intervention study which showed that such intervention reduced post-accident fatalities among accident victims by approximately 3% (Compton and Little 1983). However, given the small sample size of this study (75 persons, with only 31 of these being treated/transported by paramedic units), caution must be exercised in generalising from such results as chance factors may have influenced the outcome.

Studies of improved communication, where a physician directs by radio or other telecommunication means, paramedical personnel's treatment of the road accident victim, increased the likelihood of initial effective medical treatment on-site by some 16% (York County Study) (Ham et al 1980) and lowered the probability of death among those so treated by approximately 12%

(relative to those not receiving such pre-hospital treatment). This evidence tends to support the upgrading of ambulance officer training, ambulance-hospital communication, and an ambulance equipment standards to levels comparable to those encountered in those parts of the United States in which coordinated emergency medical systems have been introduced.

If, as United States evidence suggests, improved training, transport and communication in emergency medical situations reduces fatalities by some 10%, this would represent a saving of approximately 70 lives per year in Victoria, which represents a benefit of approximately \$21 million per annum. The costs of implementing such improvements in Victoria are largely unknown but are likely to be less than the expected benefits.

As the effectiveness and status of emergency services already operating in Victoria may be different to those which operated in the United States before upgradings in emergency transport, communication and training occurred, it was concluded that such such measures are likely to be cost-beneficial, rather than proven cost-beneficial countermeasures in respect of the Victorian road trauma situation.

No new legislation would be required to introduce such measures, which could be fully operational in the medium term.

#### Research Needed

Ambulance officers are usually the first emergency medical/paramedical personnel to arrive at the scene of a road accident. The quality and efficiency of the initial treatment provided by such personnel has considerable bearing upon the post-crash survivability of road trauma victims, and may also contribute to the mitigation or exacerbation of injuries sustained by casualties (Zieziulewicz and Tarrants, 1982).

Given that some 50% of all Victorian road fatalities occur in rural areas (RTA 1982e) - 60% of driver or passenger fatalities - the capacity of rural ambulance services to respond effectively to road trauma is of considerable importance.

The post-accident survivability of road trauma victims in country areas may be hampered by relatively long ambulance response and transport times and that the majority of rural-based ambulances are one-man units. Of these factors, the one most readily amenable to manipulation is ambulance manning. It is recommended that a controlled trial be conducted in rural ambulance districts where road trauma attendances are frequent and where a large proportion of road fatalities have occurred in recent years, to evaluate the effects upon post-accident mortality/morbidity of operating two-man ambulance units in such areas.

## 15.2 HOSPITAL EMERGENCY DEPARTMENTS

The upgrading of hospital emergency departments (in terms of staff equipment and other facilities) to cope with seriously injured patients, particularly resulting from road accidents, has been shown to reduce post-hospital reception fatalities and increase the survivability of trauma victims. United States research shows that fatality rates for road trauma victims in hospitals incorporating trauma-oriented emergency departments, ("trauma centres") to be significantly lower than those encountered in hospitals without such centres.

In Illinois, within two years of the introduction of trauma centres, the post-reception fatality rate of road accident victims had dropped 26% below the pre-implementation average, while the fatality rates of hospitals without trauma centres remained constant or increased (Miller and Goldberg 1977). Similarly, the introduction of trauma centres in Pennsylvania improved the post-reception survivability of road accident victims by approximately 20% over pre-implementation base-lines (Ham et al 1980).

As statistics on the number of Victorian road trauma victims dying in hospital emergency departments (or thereafter) were not available, it was not possible to assess at this time, the likely cost-benefits of countermeasures which revolve around upgraded injury management in hospital emergency departments. Direct comparisons were rendered inappropriate as the performance of United States' hospital emergency departments before the introduction of trauma centres, relative to the current functioning of their Victorian counterparts, is not known.

For all the above reasons, it is possible to conclude only that improvements in hospital emergency departments (ie through increased personnel, improved training and upgraded equipment) could lead to reductions in post-accident mortality/morbidity. However, in the consultants' opinion, such improvements would be implicitly cost-beneficial.

Though the establishment of trauma centres would not require new legislation, given the considerable potential costs and planning which would be involved, full implementation would be a long term project.

Further local research would be necessary to more definitively establish the cost-benefits of improving hospital emergency departments in line with United States trauma centre models.

### Research Needed

To confirm the apparent benefits which could be expected from establishing trauma centres in Victoria, a controlled trial should be carried out whereby a major metropolitan hospital is modified to include the essential features of effective USA trauma centres. During such a trial, the effects of the particular modifications upon the mortality/morbidity, duration of recovery and subsequent rehabilitation time of trauma victims, particularly road trauma victims, would be compared with the situation prevailing in matched, unmodified hospitals which

receive similar numbers of trauma cases. Summary guidelines for the trial establishment of a trauma centre are to be found in evidence presented to the Inquiry (Brentnall, 1983).

### 15.3 ESTABLISHMENT OF AN EMERGENCY MEDICAL SYSTEM

Research by the United States government suggests that the use of fully implemented emergency medical systems can prevent approximately 13% of road accident fatalities and reduce morbidity (and associated costs) by some 20% (Zieziulewicz and Tarrants 1982). If such improvement occurred in regard to Victorian road accident casualty figures, a net saving of some \$126 million per annum could be expected.

United States government estimates show that fully implemented emergency medical systems have a cost-benefit ratio in the order of 1 to 7 (Zieziulewicz and Tarrants 1982).

Though decreases in mortality/morbidity and the associated cost savings resulting from emergency medical system implementation in the United States are impressive, again the pre-implementation status of emergency services in the United States relative to those existing in Victoria are as yet unknown. Furthermore, implementation costs for a co-ordinated emergency medical system in Victoria, or even the Melbourne metropolitan area, are unknown. Thus, direct comparisons between emergency medical systems operating in the United States and the local emergency medical situation are, to say the least, difficult.

In view of the above, it must be concluded that, in relation to the Victorian situation, though the implementation of a co-ordinated emergency medical system is likely to be cost-beneficial, there is still a need for further research at the local level. Such research should aim to determine whether the cost-benefit relationships which obtain in the United States, in respect of emergency medical systems, could be expected to apply to the Victorian situation.

The establishment of an emergency medical system in Victoria does not appear to require new legislation, but full implementation would require a long term commitment.

## 16. SUMMARY OF ENDORSED COUNTERMEASURES

### 16.1 INTRODUCTION

This chapter summarises those proposals submitted to the Inquiry which were assessed as being cost-beneficial countermeasures to road trauma.

Countermeasures were assessed in the manner described in Sections 1.5 to 1.8. Briefly, an endorsed countermeasure is one for which the expected road safety benefits would be greater than the countermeasure cost, including those to the private sector as well as to the public (Government) sector. Expected benefits and costs were quantified in monetary terms, where possible, and unquantifiable costs were noted if they appeared to be substantial. Details of individual assessments are given in Chapters 2 to 15. Each endorsed countermeasure listed in this chapter is followed by the section number (in brackets) in which the assessment can be found.

The endorsed countermeasures are categorised by the strength of the evidence supporting their expected effects on road trauma. The "proven" and "likely" cost-beneficial countermeasures reflect the evidence on which they are based, whereas the "implicit" cost-beneficial measures have been assessed to be so in a less formal manner, usually based on the professional opinion of the consultants. Some proven cost-beneficial countermeasures were assessed as being "highly cost-beneficial", which means that their expected benefits are more than ten times their cost. Apart from this, there is no ranking of endorsed countermeasures within each category.

Endorsed countermeasures are also classified by an assessment of the length of the implementation period, and whether legislative-based. The implementation period is the minimum period for full implementation of the countermeasure, defined as either short term (0-1 year), medium term (2-5 years),

or long term (over 5 years). Legislative-based countermeasures are those considered to require new legislation or regulation to be implemented.

## 16.2 PROVEN COST-BENEFICIAL COUNTERMEASURES

### Highly Cost-Beneficial

- . Pre-school pedestrian education programme based on a children's traffic club (2.1)

Medium-term implementation, no legislation required.

- . Roadcraft manuals for learner permit and probationary licence applicants, plus roadcraft tests for licensing (2.5).

Medium-term implementation, no legislation required.

- . Increased minimum age for the purchase of alcoholic beverages (7.2)

Short-term implementation, legislation required.

- . Concentrated random breath testing operations, without supporting publicity, in urban areas (7.4)

Short-term implementation, no legislation required.

### Cost-Beneficial

- . Increased enforcement aimed at deterrence, with priority given to:
  - highly visible random check stops, or publicised and visible police patrols, aimed at deterring potential offenders for drink-driving and seat belt offences.

- sporadic but frequent visible police patrols at signalised intersections, or visible mechanical surveillance devices accompanied by advance warning signs, aimed at deterring potential offenders disobeying traffic control signals (4.2)

Short-term implementation, no legislation required.

- . Integrated programmes of concentrated random breath testing, supported by mass media publicity, in urban areas (7.4)

Short-term implementation, no legislation required.

- . Citizen reporting programme aimed at deterring potential drink-drivers (7.5)

Medium-term implementation, no legislation required.

- . Medium-term licence withdrawal (3-5 years) for convicted "problem" drink-drivers, with earlier relicensing possible if medical clearance from "problem" drinking is obtained (7.8).

Short-term implementation, legislation required.

- . Reduced rural speed limits (if mobility costs ignored) (8.5).

Short-term implementation, legislation required.

- . Publicity and enforcement campaign aimed at rear seat belt use by occupants aged 14-29 (9.1).

Short-term implementation, no legislation required.

. Staged programme of legislation for compulsory bicycle helmet use, accompanied by public education programme to increase acceptability especially among children (11.1).

Long-term implementation, legislation required.

. Compulsory headlight use by motorcyclists during daylight, preceded by public education programme to increase prior use and acceptability by motorcyclists (12.1).

Medium-term implementation, legislation required.

. Compulsory use of leather gloves and leather trousers by motorcyclists (12.2).

Short-term implementation, legislation required.

. Additional, high-mounted rear brake lights to be installed on new cars (13.7).

Long-term implementation, legislation required.

. Increased programmes of accident black-spot identification and cost-beneficial treatment, with increased use of the following treatments

(a) at urban intersections

- traffic signals
- signal modifications (14.1)

(b) on urban sections

- warning and directional signs
- road markings (14.2)

(c) at roadside hazards

- minor traffic management treatments
- relocation of poles
- replacement with frangible poles (14.3)

(d) at pedestrian areas

- fencing near pedestrian crossings
- central refuges
- improved street lighting (14.4)

(e) on rural roads

- short-length road widening
- overtaking lanes
- climbing lanes
- short-length widening of road shoulders
- raised reflective pavement markers
- edgeline on curves
- corner cube delineators (14.5).

Short-term, continuing into long-term implementation, no legislation required.

### 16.3 LIKELY COST-BENEFICIAL COUNTERMEASURES

- . Accelerated introduction of Bike-Ed bicycle safety programme in primary schools (2.2)

Medium-term implementation, no legislation required.

- . Pre-licence motorcycle rider training and skills testing at licensing, to complement the existing programme of training/testing for learner permit issue (3.1)

Medium-term implementation, no legislation required.

. Extension of existing 260cc limit on motorcycles used by novice motorcyclists, to affirm limit on motorcycle performance (3.3)

Short-term implementation, legislation required.

. Graduated licensing for car drivers (specific restrictions to be further researched) (3.4)

Short-term implementation (medium-term with research), legislation required.

. Visible speed detection enforcement at high accident locations (4.3,8.2)

Short-term implementation, no legislation required.

. Photographs on drivers' licences to improve efficiency of the licence withdrawal sanction (4.4)

Medium-term implementation, legislation required.

. Publicity campaigns focussed on specific problems

- to increase seat belt use among groups with low wearing rates

- to increase motorcycle conspicuity (5.3)

Short-term implementation, no legislation required.

. Expanded driver improvement programme for drivers identified by traffic violations and accident involvements (6.1)

Medium-term implementation, no legislation required.

- . Zero blood alcohol limit for drivers aged 18 and 19, supported by extensive mass media publicity (7.3).

Short-term implementation, legislation required.

- . Zero blood alcohol limit for novice drivers, supported by extensive mass media publicity (7.3)

Short-term implementation, legislation required.

- . Integrated programme of concentrated random breath testing, supported by mass media publicity, in rural areas (7.4)

Short-term implementation, no legislation required.

- . Provision of segregated bicycle facilities as part of the Melbourne Bike Plan (11.2)

Long-term implementation, no legislation required.

- . Increased emphasis on enforcement of bicycle lighting regulations (11.5)

Short-term implementation, no legislation required.

- . Random checks of tyre tread depth (13.4)

Short-term implementation, no legislation required.

- . Requirement to use running lights (headlights or parking lights) during daylight (13.6)

Short-term implementation, legislation required.

Support implementation of an Australian Design Rule requiring rear and side under-run barriers on new heavy commercial vehicles (13.9)

Long-term implementation, legislation required.

Improved ambulance officer training, ambulance-hospital communication, and ambulance equipment standards (15.1)

Medium-term implementation, no legislation required.

Emergency medical system, involving ambulance-hospital communication and upgraded ambulance and hospital facilities (15.3)

Long-term implementation, no legislation required.

#### 16.4 IMPLICIT COST-BENEFICIAL COUNTERMEASURE

"Keep Left Unless Overtaking" regulation (4.1)

Short-term implementation, legislation required.

Compulsory reporting by medical practitioners of those medical defects likely to affect safe driving (4.6).

Short-term implementation, legislation required.

- . Public education programme on drug-driving risks, through prescribing medical officers and on labels of specific drug containers. (Initially pilot programme with evaluation) (5.4)

Medium-term implementation, no legislation required initially, but perhaps ultimately.

- . Addition of accident involvements to demerit points records, to better identify drivers for driver improvement programmes (6.1)

Medium-term implementation, no legislation required.

- . Ban of alcohol advertising on television (7.5)

Short-term implementation, legislation required.

- . Requirement that a person who challenges the accuracy of a breath test, shall be informed that he has the right to have a sample of his blood taken for analysis and that the result of such analysis when completed shall be made available to him and also to the Police and may be used in evidence against him (7.9)

Short-term implementation, legislation required.

Requirement that there be provided to the prosecutor by the defendant within 7 days of being charged, notice of his intention to call expert evidence challenging the accuracy of the blood alcohol level measured by the Police stating the name of any expert who is to be called to give evidence and copies of any analysis upon which he intends to rely (7.9)

Short-term implementation, legislation required.

Extension of the two hour limit for the taking of a blood test in hospital after accident involvement and for use as evidence against the driver, to eight hours (7.9)

Short-term implementation, legislation required.

Legislation declaring it an offence to alter one's blood alcohol concentration level before analysis by an evidentiary breath test (7.9)

Short-term implementation, legislation required.

A conviction for Refusing a Breath Test to be considered to be a prior conviction for all drink-driving offences and the convicted driver should require a court order to be relicensed (7.9)

Short-term implementation, legislation required.

A conviction for having a blood alcohol concentration exceeding 0.05% to be considered a prior conviction for a conviction for Driving Under the Influence (7.9)

Short-term implementation, legislation required.

. Referral to rehabilitation treatment to be at the time of conviction, not at the time of application for licence restoration (7.9)

Short-term implementation, legislation required.

. Legislation giving Police the power to require a preliminary breath test from any driver who has committed a moving traffic offence (7.9)

Short-term implementation, legislation required.

. Legislation requiring that all children in cars should be restrained by approved child restraints or adult seat belts, coupled with a bassinet restraint hiring scheme available throughout the State (9.2)

Medium-term implementation, legislation required.

. Introduction of "on-the-spot" fines for pedestrians crossing against traffic signals, or within 20m of a pedestrian crossing device, coupled with a focus of this type of enforcement on the young, the elderly, and at night (10.2)

Short-term implementation, legislation required.

. Introduction of "on-the-spot" fines for bicycle lighting offences (11.5)

Short-term implementation, legislation required.

Support amendments to Australian Design Rules to bring safety design of forward control passenger vehicles into line with that of passenger cars (13.2)

Long-term implementation, legislation required.

"Samaritan" legislation giving legal indemnity to persons voluntarily rendering first aid to road trauma victims (15.1)

Short-term implementation, legislation required.

Establishment of trauma centres and upgrades in hospital casualty facilities (15.2)

Long-term implementation, no legislation required.

## 17. COUNTERMEASURES NOT ENDORSED AT THIS TIME

### 17.1 INTRODUCTION

This chapter lists those proposed countermeasures submitted to the Inquiry which could not be endorsed as cost-beneficial on the basis of evidence available at this time.

The method used to assess proposed countermeasures has been described in Sections 1.5 to 1.8. An endorsed countermeasure is one for which the expected road safety benefits would be greater than the countermeasure cost. Proposals which could not be endorsed are the converse of this, based on currently available evidence.

The proposals which could not be endorsed are classified in this chapter by the type of deficiency from which each suffered, as follows:

- . Absence of link with road safety. (This category also includes proposals with a negative influence on road safety).
- . Trivial contribution to total road trauma losses.
- . Absence of evidence of effectiveness.
- . Road safety benefits less than cost.

This is essentially a hierarchical system of deficiencies. A proposal which was assessed as deficient at a higher level can be presumed to have not been deficient at a lower level. Because proposals assessed as deficient at higher levels have a better basis as road trauma countermeasures, and may even be cost-beneficial in a broader context, the proposals which could not be endorsed are listed in the reverse order of the above hierarchy of deficiencies in this chapter.

Nearly all of the proposals which were assessed as having deficiencies in the last two categories were reviewed in some detail in Chapters 2 to 15. Each such proposal listed in this chapter is followed by the section number (in brackets) in which the review can be found. Proposals with deficiencies in the first two categories were not reviewed elsewhere in this report, and were categorised according to their deficiency on the basis of the professional knowledge of the consultants.

## 17.2 ROAD SAFETY BENEFITS LESS THAN COST

- . Increased driver licensing age as a drink-driving countermeasure (7.1).
- . Increased speed enforcement aimed at detection and apprehension (8.3).
- . Regulation allowing bicycling on footpaths (11.3).
- . Police bicycle patrols in residential areas (11.4).
- . Air bags in front seats of passenger cars (13.1).
- . Compulsory periodic vehicle inspection schemes, either for all cars or for older cars (13.3).
- . Requirement for 1.5mm minimum tyre tread depth (13.5).
- . Speed limiting devices (13.8).
- . Traffic signal linking (14.1).
- . Provision of median strips in locations where road widening is required (14.2).
- . General street lighting (14.2).

- . Undergrounding of electricity/telephone cables in existing urban areas (14.3).
- . Dual carriageway roads and freeways in rural areas (14.5).
- . Widening of all rural roads (14.5).
- . Edgelining of total rural road network (14.5).
- . Priority signs at all intersections (14.6).

### 17.3 ABSENCE OF EVIDENCE OF EFFECTIVENESS

- . Advanced bicycle education programme in schools for 14-16 year olds (2.2).
- . Integrated/sequential traffic safety education programme in schools (2.3).
- . Expanded pre-driver education programme in schools (2.4).
- . Upgraded driver licence training and testing (3.2).
- . Graded skill testing for novice motorcyclists (3.3).
- . Reverse right-turn/left-turn priority (4.1).
- . Conditional licence reinstatement following disqualification (4.5).
- . Medical or eyesight checks of licensed drivers, including programmes specifically for older drivers (4.6).
- . Driver training for novice drivers (5.1).
- . General road safety publicity campaigns (5.2).

publicity campaigns aimed at drink-driving and speeding (5.3).

Advanced driver training courses for traffic offenders (6.2).

Zero blood alcohol limit for all drivers (7.3).

Equal television time for anti-drink-driving publicity as for alcohol advertising (7.5).

Increased penalties for drink-driving offences (7.6).

Expansion of existing drink-driver rehabilitation courses, coupled with compulsory referral of specific types of convicted drink-drivers (7.7).

Automatic speed detection equipment (8.2).

Reduced speed limits on urban roads (8.5).

Reduced speed limits in residential areas (8.5).

Public education campaigns directing attention to the pedestrian casualty problem (10.1).

Pedestrian safety "wands".

Talking traffic signals and signs

Motorcycle hazard signs (12.3).

Programmes to increase driver awareness of motorcyclists (12.4).

Additional turning lanes at intersections (14.1).

- . First aid training for all drivers (15.1).
- . First aid kits in all vehicles (15.1).
- . First aid information on drivers licences or registration labels (15.1).

#### 17.4 TRIVIAL CONTRIBUTION TO TOTAL ROAD TRAUMA

- . Ban radios in vehicles.
- . High penalties for overcrowding of vehicles.
- . Ethnic groups to be proficient in English-language signs.
- . Improve community awareness of "000" emergency phone number.
- . Restraint of pets in cars.
- . Ban sale of newspapers and money collection from the road.
- . Require police cars to obey all traffic laws, especially speed limits.
- . Clarify right turn priority rule at intersections through medians.
- . Ban smoking while driving.
- . Clarify merge priority at ends of climbing and overtaking lanes.
- . Requirement to give way to pedestrians at Stop and Give Way signs.
- . Compulsory headlight use during dusk.

. Safety catches on foot pedals.

. Ban darkened window glass

. Require mud flaps on new cars.

. Redesign cars to reduce need for removal of hands from steering wheel.

. Name and address of owner on registration sticker.

. Signs indicating vehicle is towing.

. Require two external mirrors on all cars.

. Ban stickers on vehicle windows.

. Require white pavement paints to be "non-slip".

. Paint rural trains bright colours.

#### 17.5 ABSENCE OF LINK WITH ROAD SAFETY

. Higher demerit point disqualification level for high exposure drivers.

. Separate licences for commercial and private motoring.

. Abolish 80 km/h speed limit for novice motorcyclists.

. Convex rear vision mirrors on motorcycles.

. Raise truck speed limit to that of cars on freeways and primary arterial roads.

. Delineation and signing of traffic lanes through intersections.

## 18. INSTITUTIONAL IMPROVEMENTS

### 18.1 INTRODUCTION

A number of submissions to the Inquiry proposed institutional improvements which were not new countermeasures in a sense, but may be beneficial in overcoming problems which appear to inhibit the introduction of new countermeasures. The proposals were usually not sufficiently detailed for the consultants to assess whether each would be cost-beneficial. However, in many cases they addressed a problem which the consultants had identified was a real one. In each of these cases the consultants endorsed the suggested institutional improvement as being the basis of a change which may be cost-beneficial.

The improvements which were endorsed as potentially cost-beneficial were classified into the following categories:

- . General institutional improvements
- . Education (covering schools, licensing authorities and public education organisations).
- . Enforcement (including post-apprehension adjudication).
- . Engineering (covering vehicles and the road environment).
- . Emergency medical services.
- . Data systems.

### 18.2 GENERAL INSTITUTIONAL IMPROVEMENTS

- . Co-ordination of authorities involved in road safety to resolve competing objectives.

. Establishment of road safety resource centres in key regional areas to promote road safety at the community level.

. Development of a balanced countermeasure programme based on long-term planning and avoidance of "knee-jerk" responses.

### 18.3 EDUCATION

. Increase teacher awareness of traffic safety education.

. Professional driving instructors to have licensing function, after certification of appropriate standards.

. Replace "accident" with "crash" in public education communications.

### 18.4 ENFORCEMENT

. Establish separate traffic police force.

. Establish specific police group responsible for random roadworthy checks.

. Expand number of offences on Traffic Infringement Notices, to minimize court appearances of Police.

. Introduce administrative adjudication.

### 18.5 ENGINEERING

. Review and improve system for establishing Australian Design Rules for motor vehicle safety.

- . Review policy regarding traffic signal installation.
- . Improve deferred payment system allowing priority installation of major traffic control devices by local authorities.

#### 18.6 EMERGENCY MEDICAL SERVICES

- . Introduce central funding of emergency medical services.
- . Establish "Emergency Medical Services Advisory Council".
- . Establish professorial chair of road trauma and emergency medicine.
- . Standardise first aid procedures and teaching.
- . Rationalise and co-ordinate first aid organisations.
- . Rationalise ambulance services and medical support.
- . Place ambulance officers under medical control.
- . Establish research and development section within ambulance service.
- . Rationalise hospital emergency departments.
- . Introduce "traffic medicine" as specific training for hospital medical staff.
- . Establish the accreditation of all hospitals regarding their emergency service facilities.

## 18.7 DATA SYSTEMS

. Introduce data system improvements to better identify countermeasures and evaluate effects.

. Establish central driver record system containing information on traffic violations and accident involvements.

. Review State Traffic Accident Record system especially with a view to including more data on accidents involving property damage only.

## 19. RESEARCH NEEDED

### 19.1 INTRODUCTION

The terms of reference of the Inquiry included a requirement to report on research which should be undertaken by the State to either-

- (i) obtain more knowledge of accidents, or
- (ii) assess the value of present or proposed accident countermeasures.

Submissions to the Inquiry included a number of suggestions for research which should be undertaken, and during the assessment of proposed countermeasures the consultants identified a number of research needs. Judging the cost-benefits of non-specific research projects is always a difficult task and the consultants were not in a position to assess this, apart from determining whether there is a need for a particular piece of research.

Identified research needs were classified into the following categories:

- . Problem Identification
- . Development and Evaluation of Countermeasure Components
- . Impact Evaluations
  - Pilot Countermeasure Programmes
  - Existing Countermeasures
  - New Countermeasures
- . Administrative Evaluations.

The consultants are of the opinion that a proper evaluation of the impact on road trauma of any new countermeasure introduced should be carried out. Hence, in addition to the research topics listed here, there would be a need for impact evaluations of new countermeasures introduced as a result of the Inquiry.

## 19.2 PROBLEM IDENTIFICATION

- . Circumstances in which young drivers have high risk and high incidence of road trauma.
- . In-depth study of rural crashes.
- . Relationship between knowledge of road law and accident risk.
- . Link between penalties for traffic offences and risk associated with specific offences.
- . Surveys of exposure-to-risk for various road user groups.
- . Drug/road user combinations with high accident risks.
- . Relationship between vehicle speed and accident involvement, on urban roads and in residential streets.
- . Relationship between vehicle speed and injury severity in crashes.
- . Pedestrian exposure-to-risk and accident patterns.
- . Circumstances of accidents to drinking pedestrians.
- . Bicycle accident patterns.
- . Specific bicycle hazards.

- . Occupant injuries in side impacts.
- . Relationship between vehicle colour and accident risk.
- . Accidents involving front wheel drive vehicles.
- . Hazards due to roadside fittings.
- . Needs of emergency medical services personnel.

### 19.3 COUNTERMEASURE COMPONENT DEVELOPMENT AND EVALUATION

- . Junior bicycle safety programme.
- . Drug screening equipment.
- . Automatic speed detection equipment.
- . Anti-lock braking systems.
- . Reflector strips for front and rear of vehicles.
- . Advanced life support equipment.
- . Value of personal motorised mobility for various road user groups and circumstances.
- . Value of social costs due to lower speed limits.

### 19.4 PILOT COUNTERMEASURE IMPACT EVALUATIONS

- . Novice driver training courses.
- . Public education programme on drug-driving risks.

. Increased speed limits on urban arterial roads, to achieve speed differential with residential streets.

. Speed control devices.

. Daytime running lights for vehicles.

. Yellow lines preceding double barrier lines.

. Impact attenuating devices at roadside hazards.

. Two-man ambulance units in rural areas.

. Upgraded emergency department of a major hospital to trauma centre standard.

#### 19.5 EXISTING COUNTERMEASURE IMPACT EVALUATIONS

. Overall effect of existing programme of traffic safety education in schools.

. Pre-driver education in schools.

. Comparison of different licensing ages in the Australian States.

. Heavy vehicle driver training "packages".

. Advanced and defensive driver training courses.

. Public information on drugs and driving.

. Random breath testing in country areas, with and without supporting publicity.

. Effects of good behaviour bonds on drink-driver recidivism and accidents.

- . Drink-driver rehabilitation courses.
- . Bicycle hazard recognition course.
- . Motorcycle helmet standards.
- . Public education to increase driver awareness of motorcycles
- . Dangers of safety bars and speed humps to motorcyclists.
- . Roadside hazard identification and treatment programme.
- . Warning and advisory signs.
- . Emergency rescue teams.

#### 19.6 NEW COUNTERMEASURE IMPACT EVALUATIONS

In addition to evaluative research on any new countermeasures introduced as a result of the Inquiry, there is a high priority need for impact evaluations for two particular new countermeasures likely to be implemented in the future, because of their high cost and the somewhat tenuous evidence on which their expected effects is based:

- . Behavioural and accident-based evaluations of publicity campaigns focussed on specific problems.
- . Continuing evaluation of components of expanded Driver Improvement Programme.

## 19.7 ADMINISTRATIVE EVALUATIONS

- . Separate traffic police force (if introduced).
- . Australian Design Rule system.

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21. ANNEX

COUNTERMEASURE CLASSIFICATION  
AND ASSESSMENT FORM

COUNTERMEASURE: .....

.....

.....

	ROAD	VEHICLE	ROAD	SOCIAL
	CRASH	CRASH	INJURY / DISABILITY	INJURY / DISABILITY
CRASH				
POST CRASH				

## IDENTIFICATION

**Variation:**

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

**TARGET COMPONENT:**

Road user: Driver Passenger Motorcyclist Bicyclist  
Pedestrian Other

Vehicle: Car Motorcycle Bicycle Truck Other

Road environment: Road Roadside Other

Social environment

**TARGET EFFECT:**

Direct: Exposure Energy build-up Accident involvement  
Injury/damage Death/disability

Indirect: Knowledge Attitudes Skills Behaviour Resources

**EVIDENCE OF PROBLEM:**

Target component/effect link with road trauma losses:.....

.....

Contribution to total road trauma losses:.....

.....

**COUNTERMEASURE TYPE:**

Legislative                      Non-legislative

**IMPLEMENTATION PERIOD:**

Short term      Medium term      Long term  
(0-1 year)      (2-5 year)      (over 5 year)

**INTERVENTION STRATEGY:**

Proscriptive      Preventive      Rehabilitative      Incapacitive

## EVALUATION

**BENEFITS:**

	Quantitative	Qualitative
Direct criteria (specify)		
1.....		
2.....		
3.....		
Indirect criteria (specify)		
1.....		
2.....		
3.....		
Other benefits		
1.....		
2.....		
3.....		

Quantitative

Qualitative

PRIVATE SECTOR DISBENEFITS:

- 1.....
- 2.....
- 3.....

PUBLIC SECTOR COSTS:

- Implementation.....
- Operational.....
- Educational.....
- Others.....

REFERENCES:

- .....
- .....
- .....

ASSESSMENT

BENEFITS (\$):

- .....
- .....
- .....
- .....

COSTS (\$):

- Implementation.....
- Operational.....
- Educational.....
- Others.....

COST BENEFITS:

- .....
- .....
- .....

NOTES:

- .....
- .....
- .....

ACCEPTABILITY:

- Prior acceptance.....
- Philosophical objections.....
- .....
- Increased acceptability?.....
- .....

SUBMISSIONS:

- .....
- .....
- .....



S O C I A L

D E V E L O P M E N T

C O M M I T T E E

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Report

upon

Inquiry into

Compensation for Dispossession and

Dispersal of the Aboriginal People

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EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

---

Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

---

Tuesday, 31 May 1983

24. SOCIAL DEVELOPMENT COMMITTEE - The Honourable Evan Walker moved, by leave, That the Honourable K.I.M. Wright be discharged from attendance upon the Social Development Committee.

Question - put and resolved in the affirmative.

Ordered - That a message be sent to the Assembly acquainting them of the foregoing resolution and that a vacancy accordingly exists in the membership of that Committee.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

---

Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave and question - That, contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -  
- (Mr. Fordham) - put and agreed to.

---

Wednesday, 1 June 1983

23. MESSAGE FROM THE LEGISLATIVE COUNCIL acquainting the Assembly that they have agreed to a resolution discharging the Honourable K.I.M. Wright from attendance upon the Social Development Committee and notifying that a vacancy accordingly exists in the membership of that Committee.
25. SOCIAL DEVELOPMENT COMMITTEE - Motion made, by leave and question - That, Mr. Steggall be appointed a member of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

## FOREWORD

This report concludes a thorough and wide-ranging inquiry which included intensive consultation with non-Aboriginal and Aboriginal communities, public hearings and discussions around the State.

The report was unanimous, and recommends that the Aboriginal people should receive compensation. Further, it recommends that a Victorian Land and Compensation Council, consisting of Aboriginal representatives, should be set up to co-ordinate and administer compensation, and that funding should be provided jointly by the State and the Commonwealth.

The Committee has been meticulous in its investigation of matters contained within its terms of reference. Its recommendations are reasonable, practical and equitable but should not be taken out of the context of the entire report.

As Chairman, I would like to record my thanks to the Sub-committee for its extensive investigations and in particular to the Hon. Caroline Hogg who was Acting Chairperson during my absence overseas, to the Victorian Aboriginal Task Force who acted as consultants to the Committee, and to the Committee staff.

This Committee has taken a unique step for the State of Victoria. It has produced all-party acknowledgement of the necessity for compensation for the dispossession and dispersal of Victorian Aborigines. I believe that with the goodwill of all Victorians, justice for the Aboriginal people of this State can become a reality.

GRAHAM K. ERNST, M.P.  
Chairman

## RECOMMENDATIONS

The Committee recommends in respect of:

### (i) constitutional responsibility

- (1) That the following interpretation of the 1967 Constitutional amendment be adopted:
- (a) That the 1967 amendment to the Commonwealth Constitution gave the Federal Parliament the mandate to discharge a national responsibility to the Aboriginal and Torres Strait people of Australia.
  - (b) That, given the fact that the 1967 Constitutional amendment allows for concurrent powers of the Commonwealth and State Governments, the Victorian Government may make valid laws on any matter within its competence regarding Aboriginal Affairs, subject to two limiting conditions:
    - that to avoid the possibility of overrule by Commonwealth laws, any State legislation in regard to Aboriginal Affairs should, as far as possible, be compatible with Commonwealth Government laws on the matter; and
    - that the State Government must be prepared to finance fully or jointly any programs or measures in regard to Aboriginal Affairs which it initiates.

### (ii) legal responsibility

- (2) That the following interpretations of the 1974 Agreement be adopted:
- (a) That the 1974 Agreement which refers to Aboriginal Affairs should be one which gives rise to political obligations only, as opposed to legal obligations enforceable in a court of law.
  - (b) That, as such, the Victorian Government is free to introduce and to implement Aboriginal Affairs programs, and be responsible for their funding, over and above those of the Commonwealth Government. The introduction of any particular program to be a matter of policy within the area of the State's power in the matter.
  - (c) That the Victorian Government be aware of the possibility of persuading the Commonwealth of the importance of a particular program or programs with a view to the Commonwealth funding such program(s).

### (iii) a uniform national approach

- (3) (a) That, to ensure equity and consistency, a uniform national approach to Aboriginal Affairs is desirable at the level of general principles.

- (b) That all policy measures adopted by the Victorian Government be consistent with general principles enunciated by the Commonwealth.
- (c) That, notwithstanding the desirability of a uniform national approach, State and regional differences must be acknowledged.
- (d) That any national approach to Aboriginal Affairs take into full consideration the diversity of Aboriginal lifestyles and cultures, and individual preferences.
- (e) That local Aboriginal communities must articulate the needs of their communities themselves, and be part of both national and State decisions on policies and priorities in Aboriginal affairs.

(iv) form(s) of benefit, eligibility and equity

- (4) The Committee, accepting that Aboriginal people as a whole have suffered or been disadvantaged as the result of dispersal and dispossession, recommends that all Aboriginal people be eligible for compensation based on the following principles:
  - (a) each local Aboriginal community to establish and decide upon its priorities regarding the most desirable form(s) of assistance or benefit most appropriate to meet its needs.
  - (b) land, money and the reaffirmation of cultural identity provide the basis of self-determination, through which Aborigines can participate in future development.
  - (c) legislation should allow the proposed Victorian Land and Compensation Council to recommend and the State Government to provide monetary compensation in support of approved projects.
  - (d) the proposed Victorian Land and Compensation Council should examine, as a matter of urgency, the issue of eligibility, with a view to maintaining an Aboriginal roll or register.
- (5) All questions of equity regarding competing demands for benefits, including individual compensation, shall be resolved by the Victorian Land and Compensation Council.

(v) land rights and benefits

- (6) That land rights legislation is an integral part of amelioration for dispossession and dispersal of the Aboriginal people, and that, if there is to be legislation concerning land rights or claims, the three dimensions of land, compensation and cultural heritage be included.
- (7) That, regarding sacred and significant sites, the proposed Victorian Land and Compensation Council should have the power to make the following recommendations:

- (a) On Crown land: that the land should be held either under inalienable title or on a negotiated agreement (between the Crown and the local Aboriginal community) of access, maintenance and protection; and
  - (b) On private land: that access, maintenance and protection should be provided on the basis of negotiated agreement, between the owner and the local Aboriginal community.
- (8) That, in order to safeguard Aboriginal sites of significance within Victoria, the proposed Victorian Land and Compensation Council works closely with the Aboriginal communities throughout Victoria to establish a register of such sites of significance and have it produced as soon as possible.
  - (9) That compensation should be paid to non-Aborigines whose livelihood or interest is detrimentally affected by grants of land made on the basis of spiritual, sacred or tribal association, burial grounds, and places of great historical significance to Aboriginal people.
  - (10) That there be an educational and publicity campaign to inform the public of the nature and equity of land rights and compensation and to promote community consultation and discussion.
  - (11) That local government be encouraged to establish official links between local councillors and Aboriginal communities in their area.
  - (12) That much greater priority must be given to the study of Aboriginal history and culture in the curricula of schools and other educational institutions.

**(vi) administrative mechanisms**

- (13) That, subject to the Audit Act 1958, the administration of special forms of assistance or benefit be the responsibility of Aboriginal communities.
- (14) That the model administrative mechanism outlined in recommendations (15) to (26) form the basis of an administrative structure, but that any amendments and improvements presented by the Aboriginal community subsequent to the tabling of this Report, be considered by the Government.

**The proposed administrative mechanism**

- (15) That the South-East Land Council be reconstituted, in line with the principles of self-determination and self-management, to form a co-ordinating body re-named the Victorian Land and Compensation Council.
- (16) That such a Council consist of two delegates from each Aboriginal community, preferably one male and one female. The initial term of office to be for two years, and subsequently for four years.

- (17) That the role of the Council be:
- to overview and co-ordinate all submissions;
  - to utilise specialist groups for advice on submissions;
  - to refer submissions and suggestions back to communities for final decisions;
  - to present final submissions to the Minister and oversee progress; and
  - to process only land and compensation claims.
- (18) That delegates to the Council be elected by the local Aboriginal communities.
- (19) That each family group in the local Aboriginal community have one representative on a Family Monitoring Group, such a group to provide an accountability mechanism from representatives to the community.
- (20) That all decisions of the Council be referred back to the communities for ratification before finally being moved by the Council.
- (21) That community decisions on community matters cannot be over-ridden by the Council.
- (22) That the Council will have an education function which will be provided through an Education Group which will:
- support members of the Council in informing local communities on land claims issues; and
  - consult with non-Aboriginal groups to ensure correct information is disseminated about claims.
- (23) That the Council have the power to appoint specialist advisers, as needed, in those areas it deems necessary.
- (24) That the Council be served by a small secretariat to assist with organisational activities associated with the functioning of the Council.
- (25) That the Council have direct access to the Minister concerned and not be subject to or answerable to an Aboriginal bureaucracy or bureaucracy for Aborigines.
- (26) That, for the purposes of forward planning by the Council, triennial program funding be established to ensure a funding flow-on between each financial year.

(vii) the sources of benefit

- (27) That, having regard to justice and equity, all taxpayers should bear the cost of funding for compensation.
- (28) That both State and Federal governments should bear the responsibility of providing finance for benefits for the Aboriginal people.
- (29) That the benefits of compensation should extend for more than one generation.
- (30) That an appropriate guideline for the funding of compensation in Victoria is a guaranteed minimum annual amount of \$5 million, indexed for inflation.
- (31) That the operation of the proposed Victorian Land and Compensation Council be financed from within the guaranteed minimum annual compensation payment.

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## R E P O R T

The SOCIAL DEVELOPMENT COMMITTEE, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:-

### 1. FUNCTIONS OF COMMITTEE

The functions of the Committee are "to inquire into, consider and report to the Parliament on:

- (a) any proposal, matter or thing concerned with the social development of the people of the State;
- (b) how the life of individuals, families and communities in the State may be improved; and
- (c) the role of Government in promoting the welfare of the people of the State." <sup>1</sup>

### 2. TERMS OF REFERENCE

The Social Development Committee received a reference from the Governor in Council dated 21 December 1982:

To inquire into, consider and report to Parliament, on the steps, including special forms of assistance or benefit, desirable to ameliorate the effects of the dispossession and dispersal of the Aboriginal people and in particular to make recommendations in respect of -

- (i) constitutional responsibility having regard to the amendment to the Commonwealth Constitution consequent upon the 1967 referendum;
- (ii) legal responsibility having regard to the 1974 Agreement transferring Aboriginal affairs responsibilities from Victoria to the Commonwealth;
- (iii) the desirability of a uniform national approach to the issue;
- (iv) the most desirable form or forms of any such assistance or benefit, including the criteria for eligibility, having regard to equity;

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1. Parliamentary Committees Act 1968, Section 4E

- (v) the relationship of land rights to any forms of assistance or benefit and any special provisions which should be incorporated in Aboriginal land rights legislation;
- (vi) the most desirable manner of administration having regard to the principles of Aboriginal self-determination and self-management and to Aboriginal culture;
- (vii) the sources of any special assistance or benefit having regard to justice and equity.

### 3. COMMENT ON THE TERMS OF REFERENCE

3.1 The Committee has been concerned during the conduct of its inquiry at the misunderstanding and confusion on the part of many members of the public, over the source of the terms of reference of its inquiry. The Committee emphasises that the inquiry was referred to the Social Development Committee under section 4F (1) (a) (ii) of the Parliamentary Committee Act 1968, which provides (inter alia) that the Governor in Council by Order published in the Government Gazette may refer any proposal, matter or thing relevant to the functions of the Joint Investigatory Social Development Committee under the said Act for inquiry, consideration and report to the Parliament.

The Committee does not therefore write the terms of reference. It must proceed from the principles detailed by the Governor in Council, and follow its legal requirement to inquire into, consider and report to Parliament on the matters contained in the terms of reference. All matters forming the substance of the terms of reference are the basis of this Report. The Committee cannot go beyond the terms of reference, nor can it argue the validity or otherwise of implicit or explicit concepts therein.

In practice this means, for example, the Committee does not debate:

- that the Aboriginal people in the State of Victoria have been dispossessed;
- that the Aboriginal people in the State of Victoria have been dispersed;
- that the effects of the dispossession and dispersal of the Aboriginal people of Victoria require amelioration;
- that steps, including special forms of assistance or benefit, are desirable;
- that recommendations on such forms of assistance or benefit must have regard for equity and justice; and

- that recommendations concerning the proposed administrative machinery must have regard for the principles of Aboriginal self-determination and self-management, and Aboriginal culture.

### 3.2 The relationship between this Report and the Aboriginal Land Claims Bill 1983

The Committee has noted that there are a number of matters concerning Victorian Aborigines currently the subject of inquiry, consultation and negotiation. These include Federal initiatives and inquiries as well as the discussions preceding and subsequent to the tabling in Parliament of the Victorian Aboriginal Land Claims Bill (1983) and any other legislation.

The Committee is aware of the general misunderstanding and confusion regarding the nature and terms of the inquiry. The Committee wishes to make it clear that it is concerned with compensation and related matters and not with the Victorian Government's Bill, or any other Federal or State legislation.

To many, the issues of compensation, land rights and claims are inextricably linked. However, the Committee emphasises that in its approach to the inquiry and methods of research, it remains independent of other initiatives.

The Committee considers, however, that the recommendations of this Report should be included in land rights legislation. It believes that no meaningful resolution of the land rights issue can be achieved without a parallel development of compensation.

### 3.3 "Special forms of assistance or benefit": Compensation; "Pay-the-Rent"; Reparation

The Committee recognises that there are several terms used by the public at large to describe the process of restoration "desirable to ameliorate the effects of the dispossession and dispersal of the Aboriginal people", and that differences between the terms used are not merely semantic. The Committee has decided upon a broad concept of compensation in this inquiry concluding that it relates to a group of people as distinct from individuals,

and that it includes the notion of reparation. Professor Colin Tatz of Macquarie University, an authority on restoration and restitution, points out that a reparation model is relevant to Aborigines today in the following ways:

- (a) the giving back of that which can be given ...;
- (b) the restoration of that which can be restored ...; and
- (c) recompense for that which can neither be given back nor restored. <sup>2</sup>

In common, civil, criminal and international law the principle exists that wrongs are not only punishable but carry an obligation for some forms of reparation. In the context of this inquiry, that wrong is the dispossession and dispersal of the Victorian Aborigines.

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2. Submission by Colin Tatz, 27 July, 1983, p. 13, also in "Aborigines and the Age of Atonement" in Australian Quarterly, Sept. 1983.

4. GUIDING PROPOSITIONS AND PRINCIPLES

4.1 Guiding propositions

The Committee bases its report on two main propositions. The first is a recognition that the circumstances of this inquiry require a statement and adherence to principles as well as an understanding of practicalities. The second is a related proposition, and is the process for achieving such principles. These propositions are expanded below.

4.1.1 A concern with principles

The Committee believes that at this stage its task must be, in the main, to present principles relating to Aboriginal compensation, while at the same time investigating the procedures and measures spelt out in the terms of reference intended to attain those principles.

4.1.2 Aboriginal self-determination

The Committee has been fully aware of the need to refrain from trying to impose structures, administrative machinery, criteria and goals on Aboriginal communities. It has considered that such an imposition would result in a new form of welfare. It has therefore striven in its Report, through consultation with Aboriginal communities, to give meaning to the concept of "self-determination". Aboriginal communities have stated their concerns and interests. The Committee has not drawn up a blueprint for compensation, rather it has, together with Aboriginal communities developed a framework within which a system of compensation can be discussed, planned and negotiated.

## 5. CONSULTATION

### 5.1 Request for submissions

The inquiry commenced with a press release issued by the Chairman on 17 March 1983. General public comment was sought through city and country newspaper advertisements on 28/29 March 1983. At the same time Aboriginal groups, appropriate government agencies and interested organisations were invited to make a submission to the inquiry. Due to the lack of response to these initiatives, a further extensive mailing was conducted in November 1983, advising that the deadline for receipt of submissions had been extended.

In all, a total of 213 submissions were made to the inquiry. A list of those who made submissions is contained in Appendix 2.

### 5.2 The consultative process

From the start of its inquiry the Committee has been fully committed to consultation both with the Aboriginal community and also with the wider non-Aboriginal community. To this end, in addition to a general request for submissions, the investigative methodology has been three-pronged consisting of the engagement of the Victorian Aboriginal Task Force as the Aboriginal consultant group; the arrangement of public hearings at urban centres throughout the State; and the publication (June 1984) of a Discussion Paper.

#### 5.2.1 The Aboriginal consultants

The Victorian Aboriginal Task Force was engaged by the Committee to provide an acceptable and efficient mode of consultation, whereby the Committee could canvass the views of the Victorian Aboriginal community as fully as possible.

The Committee has been aware since the commencement of the inquiry of the complexity, sensitivity and significance of the inquiry, and the need for

close liaison and consultation with the Aboriginal community. This requirement for proper appropriate consultation was reinforced by the stated principles of "Aboriginal self-determination and self-management" contained in the terms of reference, and as defined in Appendix 1.

The procedure followed during this process of consultation included attendance by Committee members and staff at workshops organised by the Victorian Aboriginal Task Force throughout the State. The goal of these workshops was to obtain information from Aboriginal individuals, families and communities to provide community-based input into reports written by the Task Force on land rights and compensation. Additional direct consultation with members of the Aboriginal community was achieved through visits by the Committee and staff to various Aboriginal communities for informal discussions, including Lake Tyers, Framlingham, Robinvale, Mildura, Swan Hill, Echuca, Shepparton, Mooroopna and Bairnsdale.

Reports received from the Task Force include:

- . "Outline for Research Reports" (20 October 1983).
- . "Progress Report No. 1" (15 December 1983).
- . "Final Report" (September 1984).

### 5.2.2 Public Hearings

The Committee decided that because of the significance of the matter under investigation it was incumbent upon itself to seek out public comment upon its terms of reference. The low level of response to the Committee's original advertising and publicity was of concern to the Committee, and it was decided that the additional strategy of holding public hearings was necessary to attract submissions from the general public, organisations and institutions, particularly in country areas. To this end, public hearings were arranged in:

Warrnambool (cancelled: no public response to advertisements)

Ballarat - 9 April 1984

Bairnsdale - 28 May 1984

Mildura - 16 July 1984

Swan Hill - 18 July 1984

Shepparton - 30, 31 July 1984

Melbourne - 7, 8, 9 August 1984

Appendix 2 provides a list of those who made submissions to the Committee's public hearings.

It was in the course of the public hearings that the Committee became convinced of the widespread confusion and misunderstanding regarding its inquiry, terms of reference, role and identity. In an attempt to focus public attention upon the specific terms of reference given to the Committee so that the public hearing process would produce evidence to the inquiry, the Committee published a Discussion Paper.

### 5.2.3 Discussion Paper

Part (iv) of the terms of reference states that the Committee is to inquire into "the most desirable form of (any such) assistance or benefit". The Discussion Paper was published in June 1984 to assist those individuals or groups who wished to participate in the inquiry to formulate their submissions with regard to "forms of assistance or benefits".

The Committee made it clear that material in the Discussion Paper was not intended to be exhaustive or conclusive and did not necessarily reflect the opinions or views of the Committee. It consisted of matters which had been put before the Committee and were considered by the Committee in its deliberations.

The material detailed in this paper was derived from:

- submissions received by the Committee;
- reports received from the Victorian Aboriginal Task Force;
- discussion with individuals; and
- a search through available literature.

The suggestions, ideas and propositions put to the Committee and collated from the above sources were intended to serve as a focus for further discussions and to develop practical possibilities. Such information would be of major interest to the proposed Victorian Land and Compensation Council (see Chapter 12).

The Discussion Paper set out the various suggested forms of compensation under the following headings:

- . money;
- . housing;
- . employment;
- . education;
- . cultural heritage and affirmation;
- . recreation and sport; and
- . parliamentary representation.

## 6. VICTORIAN ABORIGINAL POPULATION

### 6.1 Introduction

The Committee received evidence indicating that there is considerable controversy regarding the reliability of official statistics on the number of Aborigines in Victoria. Submissions argued that there was a serious under-enumeration of Victorian Aborigines in the 1981 Census of Population and Housing, in which each person was asked if he or she was of Aboriginal or Torres Strait Islander origin.

### 6.2 Unofficial population estimates.

Several researchers and various Aboriginal organisations have expressed doubt about the validity of the 1981 Census claiming that it grossly understated the number of Aborigines living in communities throughout Victoria.

6.2.1 In response to such claims a joint investigation was undertaken by the Department of Aboriginal Affairs (DAA) and the Australian Bureau of Statistics (ABS) on 19, 20 April 1983 to determine the differences in the Aboriginal population of Robinvale, Swan Hill and Echuca as enumerated by the 1981 Census, compared with lists of the population compiled by the representative community organisations.

Table 1 below shows the resulting differences:

TABLE 1 Indications of under-enumeration of Aborigines in 1981 Census <sup>3</sup>

Locality	1981 Census Count	Aboriginal Organisation Count	Difference	% of under-enumeration
Swan Hill (Town)	155	218	63	29
Robinvale (Town)	218	291	73	25
Echuca (Town)	98	185	87	47

3. DAA - Reports of joint DAA & ABS Investigation on Aboriginal Population at Robinvale, Swan Hill and Echuca, 3 May 1983, p.2.

This investigation did not draw any conclusions relating to the extent of under-enumeration but identified those factors which contributed to this occurrence. Such factors include:

- in 1976, an attempt was made to use Aboriginal staff in the conduct of the census in areas with concentrations of Aboriginal population. By contrast, no such attempt was made in the conduct of the 1981 census.<sup>4</sup>
- an unwillingness on the part of the tenants of State Housing Commission dwellings to admit that anyone other than the approved tenants were living there.<sup>4</sup>
- a significant proportion of respondents did not either fully or partially complete the census forms due to the following reasons:<sup>5</sup>
  - . illiteracy;
  - . misunderstanding;
  - . mistrust of Government agencies;
  - . reluctance to request assistance from Census collectors; and
  - . deliberate avoidance of enumeration (predominantly by families at the lower end of the socio-economic level).

The Committee acknowledges that the Census figure is not open to amendments and that the DAA/ABS study only gives an indication that the 1981 Census figure appears to be inaccurate.

6.2.2 Late in 1981, a study of the demography of Aborigines in Victoria, entitled "No Reliable Records" was made by P. Felton. As the title suggests, this study concluded that there are no reliable records available on the number of Aborigines in Victoria. However, the following conclusions were made in regard to this study:

- . "My general conclusion was that the Victorian Aboriginal population has been growing rapidly over 25 years and is expected to continue to grow."<sup>6</sup>

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4. A. Gray and L. R. Smith, "The size of the Aboriginal population" from Australian Aboriginal Studies 1983, No. 1, pp. 8-9.

5. DAA - op. cit., p.4.

6. P. Felton, "Confusing Information on the Census Aboriginal Population - 1981", 1982, p.1

- . "In reality, I believe the extent of under-recording in Victoria (in the 1981 Census) was about 40%." <sup>7</sup>

On the basis of the latter conclusion, the 1981 Census figure estimates to 10,095.

6.2.3 In another comment on the Census figures, J. Bryant also considers that the Victorian Aboriginal population has been under-enumerated. Using the records kept by various administrators of Aboriginal dwellings, she has estimated that the population could be 14, 693. <sup>8</sup>

6.2.4 Estimates of the population by the Aboriginal community are higher. Both Felton and Bryant refer to the belief by community organisations that the 1976 population was more likely to have been around 20,000. <sup>9</sup>

6.2.5 In summary, Table 2 gives the various unofficial population estimates available of Aborigines in Victoria, together with the official Census figures:

**TABLE 2** Victorian Aboriginal Population: Census figures and unofficial estimates

Year	Unofficial Estimates			Census <sup>10</sup> figures
	Aboriginal community organisations	Felton	Bryant	
1976	20,000	-	-	14,760 *
1981	-	10,095	14,693	6,057 *

\* These figures include Torres Strait Islanders

- 7. Ibid., p.8
- 8. J. Bryant, "The 1981 Census: an attempt to more accurately enumerate the Victorian Aboriginal population." Monash University, (undated) p.4
- 9. Felton, op. cit., p.1; Ibid., p.1
- 10. ABS Information Paper Catalogue No. 2164.0, 17 August 1982, p.1.

### 6.3 Conclusion

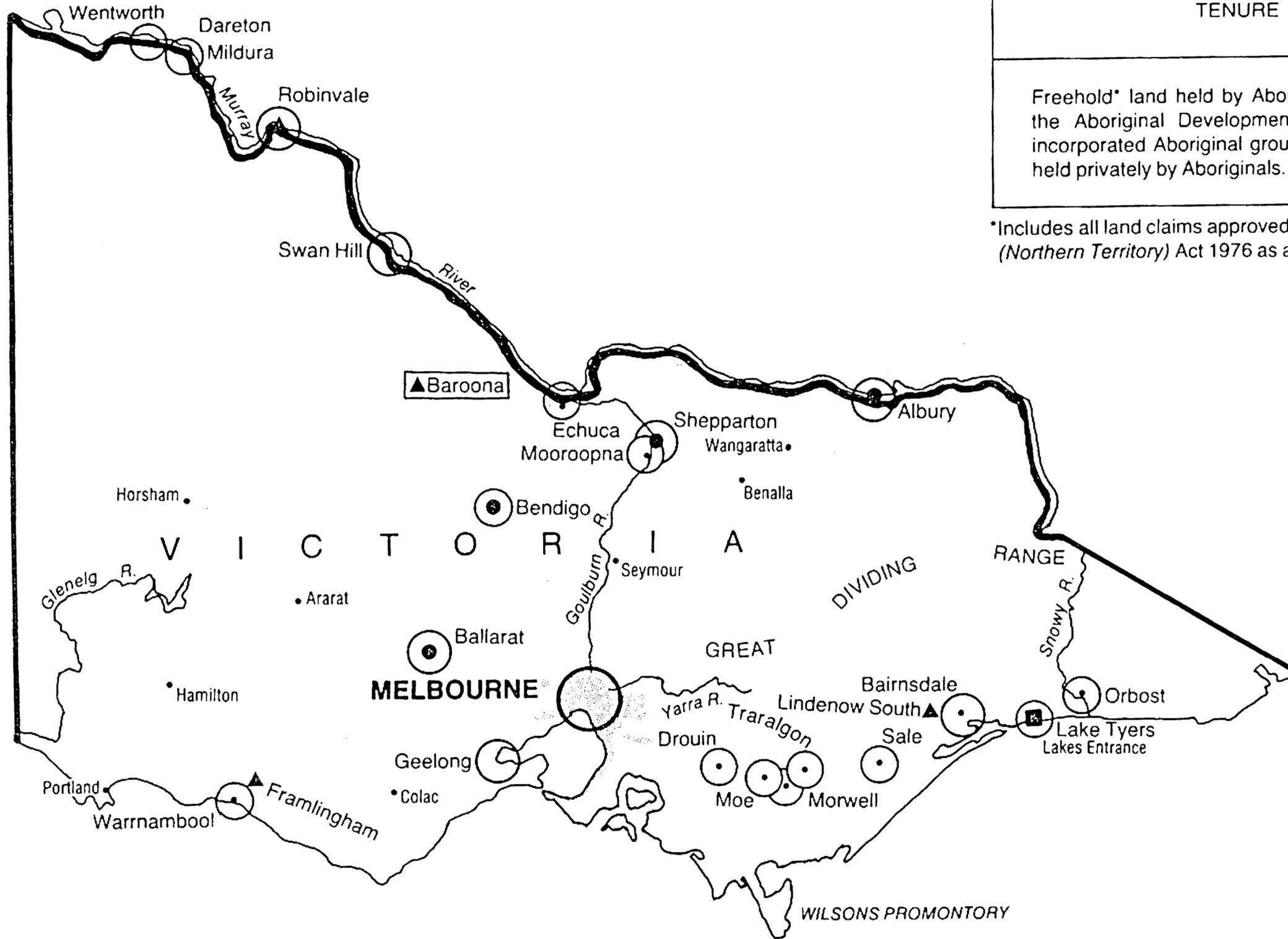
The Committee is concerned at the possibility of a considerable degree of under-enumeration of the Victorian Aboriginal population. This under-enumeration has been estimated variously as 25% (at Robinvale), 40% (by Felton) and 59% (by Bryant). The Committee is unable to determine to what extent the 60% decline in the official Census figures on the Victorian Aboriginal population between 1976 and 1981, is due to under-enumeration.

The Committee considers that an accurate enumeration of the Victorian Aboriginal population is highly desirable for the purposes of compensation. One suggestion which is taken up in Part 2 of this Report, is that a register of all Aborigines in Victoria be established, through the proposed Victorian Land and Compensation Council.

**ABORIGINAL LAND**  
Areas of 10 hectares or more at late 1980

TENURE	AREA (hectares)	
	10-1000	1000-10 000
Freehold* land held by Aboriginal land trusts, the Aboriginal Development Commission or incorporated Aboriginal groups. Excludes land held privately by Aboriginals.	▲	■

\*Includes all land claims approved by the Minister under the *Commonwealth Aboriginal Land Rights (Northern Territory) Act 1976* as at late 1980



**ABORIGINAL POPULATION OF VICTORIA 1980**

Numbers of Aboriginal people

○ 80-300

○ 300-1000

○ **MELBOURNE**  
over 5000

**SOURCES:**  
Prepared from information supplied by the Commonwealth Department of Aboriginal Affairs; supplemented by published and unpublished maps and reports.  
Ref No. NMP 79/112  
C. of A., 1982

PART 2

THE TERMS OF REFERENCE

In Part 2 of its Report, the Committee sets out its recommendations on the terms of reference, together with its rationale and arguments.

7. CONSTITUTIONAL RESPONSIBILITY

Term of reference (i) reads:

- (i) constitutional responsibility having regard to the amendment to the Commonwealth Constitution consequent upon the 1967 referendum;

7.1 Consultation

It was emphasised to the Committee in its consultation with Aborigines, that a mandate had been given to the Commonwealth government to act on behalf of the Aboriginal people. The Committee also sought legal opinion to clarify the constitutional responsibilities in question.

7.2 Background to the 1967 constitutional amendment

The purpose of the amendment was considered to be two-fold, viz.:

"First, it will remove words from our Constitution that many people think are discriminatory against the Aboriginal people.

Second, it will make it possible for the Commonwealth Parliament to make special laws for the people of the Aboriginal race, wherever they may live, if the Parliament considers it necessary." 11

The result of this amendment was that Section 51 of the Commonwealth Constitution was altered by omitting from paragraph (xxvi) the words:

"other than the Aboriginal race in any State."

The amended section of the Constitution now reads:

"The Parliament shall, subject to this Constitution, have power to make laws for the peace, order and good government of the Commonwealth with respect to:

(xxvi) "The people of any race for whom it is deemed necessary to make special laws."

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11. "The Arguments for and against the Proposed Alteration together with a Statement Showing the Proposed Alteration" p.13.

### 7.3 Implications of the amendment

Although the Commonwealth has an unqualified power to legislate for the Aboriginal race in any State, this power is not an exclusive Commonwealth power; the Constitutional amendment allows for concurrent powers of the Commonwealth and State Governments. 12

The use of 'deletion' effects a grant of power, i.e., the deletion from the Constitution of the phrase "other than the Aboriginal race in any State" brings about a grant of power to the Commonwealth Parliament to make laws for those previously excluded. In other words, since the 1967 Constitutional amendment, the Commonwealth has the power to legislate for the Aboriginal people in any State.

This power, granted to the Commonwealth to make laws for the Aboriginal people, is considered by the Commonwealth to be a 'plenary' power, i.e. one which is absolute and unqualified.

Furthermore, this grant of power to the Commonwealth raised the possibility of the overruling of State laws if they were inconsistent with Federal legislation. The Commonwealth is also in a position to override inconsistent provisions in State Acts.

The only limitation to this power of the Commonwealth is, according to one commentator, that Commonwealth laws made under section 51 (xxvi) be "subject to this Constitution", i.e., that:

"There is, subject to this qualification, an unfettered discretion in the Parliament to make laws which have a connection with the race of the person on whom they operate.

The limit imposed by the qualification would probably be that an acquisition of lands in a State could not be made without it being on 'just terms'." 13

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12. Submission from the Department of the Premier and Cabinet, April 1984, p.3

13. Eastick, J. "The Australian Aborigine: Full Commonwealth Responsibility under the Constitution." Melbourne University Law Review, Vol. 12, Dec.1980, p.540

## RECOMMENDATION

1. The Committee recommends that the following interpretation of the 1967 Constitutional amendment be adopted:
  - (a) That the 1967 amendment to the Commonwealth Constitution gave the Federal Parliament the mandate to discharge a national responsibility to the Aboriginal and Torres Strait people of Australia.
  - (b) That, given the fact that the 1967 Constitutional amendment allows for concurrent powers of the Commonwealth and State Governments, the Victorian Government may make valid laws on any matter within its competence regarding Aboriginal Affairs, subject to two limiting conditions:
    - that to avoid the possibility of overrule by Commonwealth laws, any State legislation in regard to Aboriginal Affairs should, as far as possible, be compatible with Commonwealth Government laws on the matter; and
    - that the State Government must be prepared to finance fully or jointly any programs or measures in regard to Aboriginal Affairs which it initiates.

## 8. LEGAL RESPONSIBILITY

Term of reference (ii) reads:

- (ii) Legal responsibility having regard to the 1974 Agreement transferring Aboriginal Affairs responsibilities from Victoria to the Commonwealth;

### 8.1 Consultation

The Committee's consultation with Aboriginal people indicated their belief that the transfer of legal responsibility to the Commonwealth does not abrogate State responsibility to Aborigines. The Victorian Aboriginal Task Force report indicated that the views of many Aborigines are that:

"...for the larger part of 196 years of the European presence in our country, Aboriginal people have, and are continuing to suffer as a result of action taken at the local or State level. Therefore, it is incumbent upon State governments to accept responsibility in matters of restitution and compensation." <sup>14</sup>

The Committee again also consulted a number of lawyers to clarify the legal responsibilities in question.

### 8.2 Commonwealth/State Arrangement (1974)

This Arrangement was entered into on 22 November 1974 by the Commonwealth with the State of Victoria, pursuant to the provisions of Section 5 of the Aboriginal Affairs (Arrangements with the States) Act 1973 (Commonwealth), whereby it was agreed inter alia that:

Clause 2 - Subject to the provisions of this arrangement, the Australian Government shall assume full responsibility for the administration of Aboriginal Affairs within the State.

Clause 3 - The Australian Government will establish in the State an Office of the Department for the administration in the State of the responsibilities of the Australian Government for the development of the Aboriginal people, including responsibilities for the planning, co-ordination and financing of such activities as are designed to promote the economic, social and cultural advancement of that people.

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14. Consultant's Report, September 1984, p.12

Clause 4 - The Australian Government will establish and provide for the operation of a consultative body which shall be empowered to perform in relation to the responsibilities of the Australian Government assumed under this arrangement the functions that the Aboriginal Affairs Advisory Council was established by section 10 of the Victorian Act to perform for the purposes of the operation of that Act; and

Clause 5 - This arrangement shall not in itself or by its implementation derogate from or affect the existing authority of the Victorian Government to introduce and implement measures to meet the special needs of the Aboriginal people in the ordinary course of the provision of services of the Victorian Government such as education, health, housing and community welfare.

The Committee notes that the terms of reference mention "the 1974 Agreement", but it has decided, for the sake of consistency with the 1973 Act, to use the term "Arrangement".

### 8.3 Implications of the Arrangement

Clauses 2 and 3 appear to make it clear that the responsibilities assumed by the Commonwealth Government would encompass, inter alia, the funding of Aboriginal Affairs programs in the State of Victoria.

However, Clause 2 is expressed to be "Subject to the provisions of this arrangement...". Thus, this clause should be read taking into account the provisions of Clause 5. It appears then that the Commonwealth Government would not, by virtue of the Arrangement, be responsible for the funding of Aboriginal Affairs programs which may be introduced or implemented by the Victorian Government in accordance with the provisions under Clauses 3 and 5.

### 8.4 Advice of the Victorian Crown Solicitor's Office

The view expressed by the former Victorian Crown Solicitor is that the 1974 Arrangement between the Commonwealth and the State Governments is political rather than contractual in nature. His view is:

"...that the arrangements under s.5 of the Commonwealth Act are not intended to be legally enforceable contracts justiciable in a court of law,...that the 1974 Arrangement with respect to Aboriginal affairs gives rise to political obligations only and not to legal obligations enforceable by a court." <sup>15</sup>

It may be concluded that the 1974 Arrangement with respect to Aboriginal Affairs is a political arrangement - where "political" is used to refer to promises and undertakings of governments - and is therefore one which is not legally enforceable.

There is always the possibility of this Arrangement being breached either by the existing or future Commonwealth or State governments.

## RECOMMENDATION

2. **The Committee recommends that the following interpretations of the 1974 Agreement be adopted:**
  - (a) **That the 1974 Agreement which refers to Aboriginal Affairs should be one which gives rise to political obligations only, as opposed to legal obligations enforceable in a court of law.**
  - (b) **That, as such, the Victorian Government is free to introduce and to implement Aboriginal Affairs programs, and be responsible for their funding, over and above those of the Commonwealth Government. The introduction of any particular program to be a matter of policy within the area of the State's power in the matter.**
  - (c) **That the Victorian Government be aware of the possibility of persuading the Commonwealth of the importance of a particular program or programs with a view to the Commonwealth funding such program(s).**

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15. Memorandum for the Acting Secretary of the Law Department from the Crown Solicitors's Office (Re. Agreement with reference to Aboriginal Affairs in Victoria (1974)), 30 March 1983, p.4.

## 9. A UNIFORM NATIONAL APPROACH

Term of reference (iii) reads:

(iii) the desirability of a uniform national approach to the issue;

### 9.1 Consultation

It became clear to the Committee in the course of its consultation with the Aboriginal community, that many Aborigines were cautious in supporting a uniform national approach due to regional differences in lifestyles, conditions and history of contact with non-Aborigines. Concern was expressed by some Aboriginal people over the fact that successive Federal governments, by their lack of action, had shown that they were unwilling to act against State governments.

### 9.2 Federal initiatives

Given the primary responsibility of the Commonwealth Government and the reason for Constitutional amendments to ensure equity and consistency throughout Australia with respect to Aboriginal Affairs, it is desirable that a uniform national approach should be taken, at least in matters of principle.

### 9.3 Regional differences

The Committee believes that to ensure uniformity of principle, all policy measures adopted by the Victorian Government should be consistent with the general principles enunciated by the Federal Government. However, notwithstanding the need for a uniform national approach, it is imperative that regional differences should be acknowledged and that Aboriginal communities should be involved in decisions and priorities relating to measures to be taken. The Committee concurs with the finding of the Consultants that:

"In approaching the matter whether it be at State or Federal level, the diversity of Aboriginal lifestyles and cultures, and within these groups, the individual preferences, must be taken into consideration. Needs have to be articulated by Aborigines themselves NOT determined by government then thrust upon Aborigines as has been done in the past." <sup>16</sup>

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16. Consultant's Report, September 1984, p.14

## RECOMMENDATION

- (3) The Committee makes the following recommendation regarding a uniform national approach:
- (a) That, to ensure equity and consistency, a uniform national approach to Aboriginal Affairs is desirable at the level of general principles.
  - (b) That all policy measures adopted by the Victorian Government be consistent with general principles enunciated by the Commonwealth.
  - (c) That, notwithstanding the desirability of a uniform national approach, State and regional differences must be acknowledged.
  - (d) That any national approach to Aboriginal Affairs take into full consideration the diversity of Aboriginal lifestyles and cultures, and individual preferences.
  - (e) That local Aboriginal communities must articulate the needs of their communities themselves, and be part of both national and State decisions on policies and priorities in Aboriginal affairs.

## 10. FORM(S) OF BENEFIT, ELIGIBILITY AND EQUITY

Term of reference (iv) reads:

- (iv) the most desirable form or forms of any such assistance or benefit, including the criteria for eligibility, having regard to equity;

10.1 The Committee accepts the definition <sup>17</sup> of self-determination as:

"...the right of Aboriginal people to have power over decision-making processes on matters which affect their lives, such as the setting of priorities and the allocation of resources for Aboriginal programs and associated policy determination."

The Committee accepts the definition of self-management as:

"...a related term which is defined as the right of Aboriginal people to have managerial and administrative control over matters affecting Aborigines and their own programs." <sup>18</sup>

Self-determination and self-management do not mean immunity from the law or a separate nation.

Both Commonwealth Government and the Victorian State Government are committed to self-determination and self-management.

### 10.2 Forms of benefits proposed to the Committee

The Committee received many suggestions and propositions concerning the most desirable form(s) of assistance or benefit from a variety of sources, including written submissions, evidence at public hearings and reports from the Consultants. As a means of encouraging more detailed discussion and development of ideas on the forms of compensation relevant to contemporary Victorian society, the Committee issued a Discussion Paper <sup>19</sup> in June 1984, consisting of matters relating to form(s) of benefits which had been put before the Committee.

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17. See Appendix 1 for "Definition and explanation of terms".  
18. Joint submission from the Working Group on Aboriginal Matters, (WGAM) Province of Victoria, Anglican Church of Australia, and Aboriginal Affairs Committee, Division of Ecumenical Mission, Synod of Victoria, Uniting Church in Australia, March, 1984, p.25.  
19. Social Development Committee, Discussion Paper on matters before the Committee conducting an inquiry into Aboriginal Compensation, June, 1984

As a result of consultation, public hearings and responses to the Discussion Paper, the Committee has concluded that a detailed listing of forms of benefit desirable to ameliorate dispossession and dispersal is inappropriate. Such a listing would run counter to the guiding principle of self-determination, and would present an externally-imposed blueprint on the Aboriginal and non-Aboriginal communities. Furthermore, such a list might lead to an erroneous supposition that it contained fixed maximum or minimum benefit claims.

- 10.3 The Committee recognises the central role of the Aboriginal community in determining its own needs. However, notwithstanding self-determination, it has received a clear indication in the process of consultation of the significance of land, money, and the reaffirmation of the value of Aboriginal culture. The Committee believes that the future development of the Aboriginal people in this State depends on the solid foundation of these three elements. Land as a spiritual base, a home and an economic base; the money to support such grants of land and the means to combat the accrued disadvantage due to cultural dominance by any group, were consistently presented to the Committee as the minimum infrastructure necessary for future development. The Committee believes, therefore, that any proposed legislation on forms of assistance or benefit for the Aboriginal people must co-ordinate these three components.

10.4 Criteria for eligibility

The Committee has decided in principle that since Aboriginal people have suffered or been disadvantaged as the result of dispossession and dispersal, Aboriginal people as a whole are eligible for compensation.

However, issues of eligibility and equity are very complex, and contain within them the seeds of future dissension. Such complexity was not of the Aboriginal community's making for, as the submission of the Aboriginal Land Council put it:

"The South Eastern Aboriginal communities have been the most severely affected from the early custom of removing groups from one area and transferring them to another...Forced removal of children from kin and area of origin resulted in an injustice that can never be compensated. Adoption and fostercare practices further demoralized our people and our communities are still suffering the results." 20

The Committee believes that the issue of eligibility is one that is best settled by the Aboriginal community itself through the duly elected and accountable mechanism outlined in Chapter 12. The recommended Victorian Land and Compensation Council should, as a matter of urgency, examine the issue of eligibility, with a view to maintaining an Aboriginal roll or register.

#### 10.5 Equity

The Committee considers that the question of equity should have maximum input from local Aboriginal communities. Decisions on equity may take into account any existing ownership of land, individual and community resources, relative number of people to benefit and the existing level of services available.

The proposed administrative mechanism outlined in Chapter 12 provides for collective decision-making in response to community needs and the basis of equity is provided through the political structure of decision-making. Decisions of equity regarding competing demands for benefits will be made by the Victorian Land and Compensation Council which will be accountable to the local Aboriginal communities. In carrying out its function it will be essential for the Victorian Land and Compensation Council to facilitate maximum information and discussion in local communities between Aboriginal and non-Aboriginal.

Any decision on land use must conform with Victorian laws and regulations which govern all land.

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20. Submission of Aboriginal Land Council Victoria, 17 January, 1984, pp. 2-3

## RECOMMENDATIONS

- (4) The Committee, accepting that Aboriginal people as a whole have suffered or been disadvantaged as the result of dispossession and dispersal, recommends that all Aboriginal people be eligible for compensation based on the following principles:
- (a) each local Aboriginal community to establish and decide upon its priorities regarding the most desirable form(s) of assistance or benefit most appropriate to meet its needs.
  - (b) land, money and the reaffirmation of cultural identity provide the basis of self-determination, through which Aborigines can participate in future development.
  - (c) legislation should allow the proposed Victorian Land and Compensation Council to recommend and the State Government to provide monetary compensation in support of approved projects.
  - (d) the proposed Victorian Land and Compensation Council should examine, as a matter of urgency, the issue of eligibility, with a view to maintaining an Aboriginal roll or register.
- (5) All questions of equity regarding competing demands for benefits, including individual compensation, shall be resolved by the Victorian Land and Compensation Council.

## 11. LAND RIGHTS AND BENEFITS

Term of reference (v) reads:

- (v) the relationship of land rights to any forms of assistance or benefit and any special provisions which should be incorporated in Aboriginal land rights legislation;

### 11.1 Consultation

The Committee found unanimous agreement in its consultation with Aborigines, with the view that land was the cornerstone of existence. "The land - my mother" expressed the nature of this relationship. Aside from being an economic base and source of food it became clear to the Committee that land provided the cultural and spiritual pivot of Aboriginal society and that to have at least some of one's own sacred or tribal land is of prime importance to Aboriginal communities. Such evidence reinforced an increasing understanding of both the real and symbolic significance of land to Aboriginal life throughout Australia. In many States and Territories this understanding is demonstrated practically, through legislation which formalises the belief of governments that land rights are an integral part of amelioration for dispossession and dispersal. The Victorian Government is currently involved in such a process. <sup>21</sup>

### 11.2 Land Rights and Benefits

The Committee believes that if there is to be legislation on land rights then because of the close relationship between land, cultural heritage and compensation, such land rights legislation should include these three elements.

### 11.3 Land Title

It is the view of the Committee that in making decisions on sacred and significant sites, the Victorian Land and Compensation Council should have the power to make the following recommendations:

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21. See: Victorian Government's Aboriginal Affairs Bill; and the Victorian Government's Aboriginal Affairs Discussion Paper, September 1984.

- (a) On Crown Land: that the land should be held either under inalienable title or on a negotiated agreement (between the Crown and the local Aboriginal community) of access, maintenance and protection; and
- (b) On private land: that access, maintenance and protection should be provided on the basis of negotiated agreement, between the owner and the local Aboriginal community.

#### 11.4 Sacred and significant sites register

In order to safeguard Aboriginal sites of significance within Victoria, this Committee recommends that the Victorian Land and Compensation Council works closely with the Aboriginal communities throughout Victoria to establish a register of such sites of significance and have it produced as soon as possible.

#### 11.5 Non-Aboriginal compensation

The Aboriginal community made it clear to the Committee that direct grants of land made on the basis of spiritual, sacred or tribal association, burial grounds, and places of great historical significance such as massacre sites should not be at the expense of non-Aborigines. As one witness stated at a public hearing:

"We do not want to create any bitterness and we believe white people would become bitter if they were to suffer the same affliction as did our people. We do not want to practice what we preach against by dispossessing people."<sup>22</sup>

The Committee concurs and believes that compensation should be paid to non-Aborigines whose livelihood or interest is detrimentally affected by any such grants of land.

#### 11.6 Information and Education

The Committee believes that in such a sensitive area as land, compensation and the cultural heritage of Aborigines, rumour, misinformation and misinterpretation are rife. To counter alarmist responses to statements of

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22. Mr. Stewart Murray: Swan Hill public hearing, 18 July, 1984, p.350

generally doubtful accuracy the Committee believes that there is a pressing need for clear and accurate information to be made available to the general public in a form which promotes community consultation and discussion. Further that local government be encouraged to establish official links between local councillors and Aboriginal communities in their area.

The Committee believes that much greater priority must be given in the curricula of schools and other educational institutions to the study of Aboriginal history and culture.

### RECOMMENDATIONS

- (6) That land rights legislation is an integral part of amelioration for dispossession and dispersal of the Aboriginal people, and that, if there is to be legislation concerning land rights or claims, the three dimensions of land, compensation and cultural heritage be included.
- (7) That, regarding sacred and significant sites, the proposed Victorian Land and Compensation Council should have the power to make the following recommendations:
  - (a) On Crown Land: that the land should be held either under inalienable title or on a negotiated agreement (between the Crown and the local Aboriginal community) of access, maintenance and protection; and
  - (b) On private land: that access, maintenance and protection should be provided on the basis of negotiated agreement, between the owner and the local Aboriginal community.
- (8) That, in order to safeguard Aboriginal sites of significance within Victoria, the proposed Victorian Land and Compensation Council works closely with the Aboriginal communities throughout Victoria to establish a register of such sites of significance and have it produced as soon as possible.
- (9) That compensation should be paid to non-Aborigines whose livelihood or interest is detrimentally affected by grants of land made on the basis of spiritual, sacred or tribal association, burial grounds, and places of great historical significance to Aboriginal people.
- (10) That there be an educational and publicity campaign to inform the public of the nature and equity of land rights and compensation and to promote community consultation and discussion.
- (11) That local government be encouraged to establish official links between local councillors and Aboriginal communities in their area.
- (12) That much greater priority must be given to the study of Aboriginal history and culture in the curricula of schools and other educational institutions.

## 12. ADMINISTRATIVE MECHANISMS

Terms of reference (vi) reads:

- (vi) the most desirable manner of administration, having regard to the principles of Aboriginal self-determination and self-management and to Aboriginal culture.

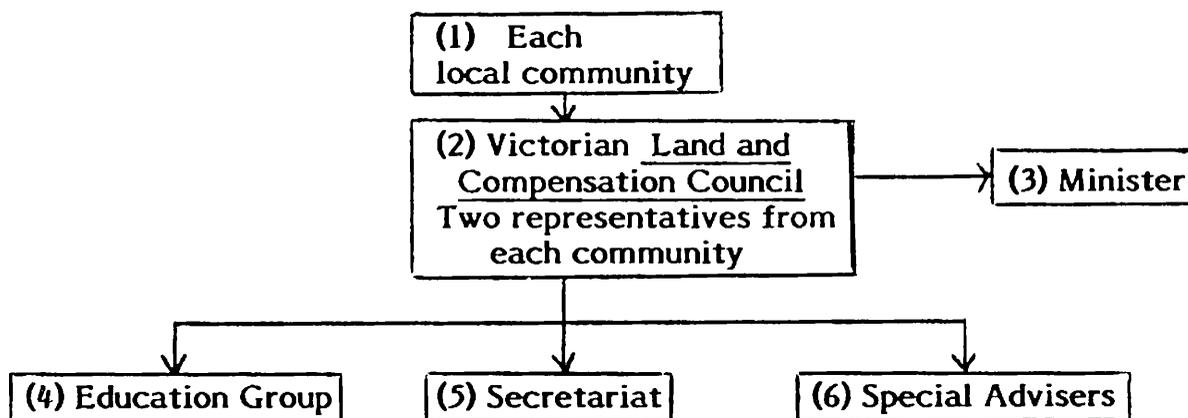
### 12.1 Introduction

The Committee considered several models on which to base its recommendations. The Committee had regard to an administrative mechanism which was efficient, fair, and economic.

### 12.2 Structure for the administration of land and compensation claims

12.2.1 The following diagram <sup>23</sup> sets out the recommended structure:

Diagram 1



12.2.2 The following notes (1) - (6) as indicated in the above diagram, provide further detail:

- (1) Each local community elects two representatives (preferably one male, one female) to the Victorian Land and Compensation Council. The initial term of office should be for two years, and thereafter for four years.

23. Diagram 1 and the following explanatory notes are derived largely from the Consultant's Report (Victorian Aboriginal Task Force) September 1984, pp. 21-23.

The Committee also sees merit in the Consultant's recommendation that each family group in the local community should have one representative on a "family monitoring group" whose task it is to support the elected representatives and monitor their performance. In this way, greater accountability of the representatives to the local groups will be encouraged.

(2) The Council has the following functions:

- . to overview and co-ordinate all submissions;
- . to use specialist groups for advice on submissions;
- . to refer submissions and suggestions back to communities for final decisions;
- . to present final submissions, as ratified by community meetings, to the Minister; and
- . to follow up progress of such submissions.

In addition, the Committee sees merit in the Consultant's recommendation that the Council should not be empowered to override the community decision on community matters, and that there should be no appeals mechanism.

(3) Direct access to the Minister(s) is envisaged, and the concept of an Aboriginal bureaucracy or bureaucracy for Aborigines has been rejected.

(4) The Council will also have an education function, which will be provided through an Education Group who will:

- . support members of the Council in informing local communities on land claims issues; and
- . consult with non-Aboriginal groups to ensure correct information is disseminated about claims.

(5) A small Secretariat comes directly under the authority of the Council, with organisational activities associated with the functioning of the Council.

(6) The Specialist Advisers are called upon by the Council as needed.

## RECOMMENDATIONS

- (13) That, subject to the Audit Act 1958, the administration of special forms of assistance or benefit be the responsibility of Aboriginal communities.
- (14) That the model administrative mechanism outlined in recommendations (15) to (26) form the basis of an administrative structure, but that any amendments and improvements presented by the Aboriginal community subsequent to the tabling of this Report, be considered by the Government.

### The proposed administrative mechanism

- (15) That the South-East Land Council be reconstituted, in line with the principles of self-determination and self-management, to form a co-ordinating body re-named the Victorian Land and Compensation Council.
- (16) That such a Council consist of two delegates from each Aboriginal community, preferably one male and one female. The initial term of office to be for two years, and subsequently for four years.
- (17) That the role of the Council be:
- . to overview and co-ordinate all submissions;
  - . to utilise specialist groups for advice on submissions;
  - . to refer submissions and suggestions back to communities for final decisions;
  - . to present final submissions to the Minister and oversee progress; and
  - . to process only land and compensation claims.
- (18) That delegates to the Council be elected by the local Aboriginal communities.
- (19) That each family group in the local Aboriginal community have one representative on a Family Monitoring Group, such a group to provide an accountability mechanism from representatives to the community.
- (20) That all decisions of the Council be referred back to the communities for ratification before finally being moved by the Council.
- (21) That community decisions on community matters cannot be over-ridden by the Council.

- (22) That the Council will have an education function which will be provided through an Education Group which will:
- support members of the Council in informing local communities on land claims issues; and
  - consult with non-Aboriginal groups to ensure correct information is disseminated about claims.
- (23) That the Council have the power to appoint specialist advisers, as needed, in those areas it deems necessary.
- (24) That the Council be served by a small secretariat to assist with organisational activities associated with the functioning of the Council.
- (25) That the Council have direct access to the Minister concerned and not be subject to or answerable to an Aboriginal bureaucracy or bureaucracy for Aborigines.
- (26) That, for the purposes of forward planning by the Council, triennial program funding be established to ensure a funding flow-on between each financial year.

### 13. THE SOURCES OF BENEFIT

Term of reference (vii) reads:

- (vii) the sources of any special assistance or benefit having regard to justice and equity.

#### 13.1 Funding principles

Evidence presented to the Committee suggested that rather than collect from only some sections of the community, all taxpayers should bear the cost and Government should bear the responsibility of raising the funds.

#### 13.2 Consultation

During the consultations the Committee was presented with a range of different formulae for provision of special benefits, the two most frequently suggested were:

- a straightforward proportion of the gross revenue of the State or the Commonwealth be assigned annually; and
  - a proportion of the gross revenue of the State equivalent to a given percentage (say 7.5 per cent) of the State land tax be assigned annually.
- (i) A proportion of gross revenue:

An argument was advanced that there was a precedent for such a scheme. As one submission stated:

"When in 1889 the Imperial authorities granted Sovereign Rights to the West Australian Parliament, they wrote into the Constitution Act (s.70) that a minimum of \$10,000 or 1% of the gross revenue, whichever was greater, should be paid annually into a fund beyond the reach of the W.A. Parliament for the exclusive use of Aboriginal natives as compensation for being disposed of their lands. (See Peter Biskup: Not Slaves, Not Citizens, p.25 Univ. of Queensland Press, 1973; Patsy Adam Smith: No Tribesman, p.47, Seal Books Rigby, 1974)." <sup>24</sup>

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24. Submission of S. Pelczynski, 28 August, 1984, pp.10-11.

(ii) A land tax formula:

The most commonly quoted formula was that provided for under the New South Wales Aboriginal Lands Act 1983 which attempted to give Aborigines an economic base and also an assured source of adequate funding over a long term. The Act provides for an annual amount equivalent to 7.5 per cent of land tax revenue received by the New South Wales Government to be set aside for a period of 15 years, to provide a fund to enable Aboriginal communities to acquire and develop land, and to meet administrative costs. Fifty per cent of the annual allocation is to be invested and fifty per cent is to be allocated to the Aboriginal community bodies.

13.3 Joint responsibilities

The Committee considers, and emphasises that it also represents views received from the Aboriginal community, that both State and Federal Governments have a responsibility to provide finance for assistance or benefits to the Aboriginal people. It considers that ultimately funding of compensation must be a joint State/Commonwealth responsibility. The Committee is concerned that there should be no delay occasioned by fruitless Commonwealth/State conflicts, and that both Governments should accept their financial responsibilities.

13.4 The extended time period

The Committee believes that the time period allowed in the N.S.W. legislation is too short as it would directly benefit only one generation. In many cases it was considered that the effects on Aboriginal families of dispossession and dispersal would take more than one generation to overcome. Many families are so far below minimum living standards and conditions that it would take at least one generation to reach such minimum levels. A re-assessment of the situation should occur when the first generation to benefit reaches maturity.

13.5 The Committee considers an appropriate guideline for funding of compensation in Victoria is a minimum annual amount of \$5 million,

estimated on the basis of \$300 per Aboriginal person. This sum should be met by an equal grant from the Victorian Government and the Federal Government. The operation of the Council should be financed from within this amount. However the Committee notes that the final decision about the amount of funding provided rests with the government of the day.

**RECOMMENDATION:**

- (27) That, having regard to justice and equity, all taxpayers should bear the cost of funding for compensation.**
- (28) That both State and Federal governments should bear the responsibility of providing finance for benefits for the Aboriginal people.**
- (29) That the benefits of compensation should extend for more than one generation.**
- (30) That an appropriate guideline for the funding of compensation in Victoria is a guaranteed minimum annual amount of \$5 million, indexed for inflation.**
- (31) That the operation of the proposed Victorian Land and Compensation Council be financed from within the guaranteed minimum annual compensation payment.**

**Committee Room  
25 October 1984.**

## APPENDIX 1

### DEFINITION AND EXPLANATION OF TERMS

1. Aborigine: Those persons of Australian Aboriginal descent who identify as such and who are recognised by members of the Aboriginal community as such. This accords with the Commonwealth definition. 25
2. Aboriginal: The adjectival form of "Aborigine" defined in 3.1.
3. Affirmative Action: An action to correct the effects of past discrimination to eliminate present discrimination, or to prevent discrimination in the future.
4. Compensation
  - 4.1 General definition: The making up or making amends for some form of loss or damage - something being given or received as recompense such as an equivalent for services, debt, loss, suffering etc. 26
  - 4.2 The legal definition: Compensation in British law is usually defined as:

"the pecuniary recompense which a person is entitled to receive in respect of damage or loss which he has suffered" 27

Two of many examples of compensation are:-

- (i) payments by public authorities in respect of land or other property lawfully acquired under statutory powers or injuriously affected by or under statutory provisions (known as compulsory acquisition).
- (ii) payments by government departments or statutory bodies in respect of damage to property or personal injuries. 28

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25. "An Aboriginal or Torres Strait Islander (is) a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives." Year Book of Australia 1983, p.751
  26. Concise Oxford Dictionary, 6th edition, OUP, 1980, p.206;  
Macquarie Dictionary, latest edition, p. 387.
  27. Halsbury's Laws of England, Vol. 12, 4th edition, Butterworths, London, 1973, p.426.
  28. Ibid.

- 4.3 Australian examples: The concept of compensation is deeply ingrained in the Australian notion of justice, <sup>29</sup> such as:
- . worker's compensation for injury sustained in connection with an employee's work;
  - . compensation for loss of amenities or for resumed properties, including compulsory acquisition of land;
  - . cash sums are awarded to victims of crime; and
  - . compensation is sought through libel suits if an individual believes that his/her reputation has been wronged.
5. Direct Discrimination: Exclusion from a benefit or opportunity on the grounds of an irrelevant personal characteristic such as race or sex. The explicit exclusion of women, migrants or Aborigines from a particular occupation constitutes direct discrimination.
6. Discrimination: Denial of a benefit (including employment) on the basis of an irrelevant personal characteristic such as race, sex, or marital status. It may be intentional or unintentional.
7. Dispossession: Describes the effects that the European settlement of Victoria had, and still has, on the Aboriginal people. It is the process and end result of European settlement which took over land occupied by Aborigines, often through violent means, and without provisions for adequate negotiation, bargaining, treaties or compensation, and the subsequent treatment of the Aborigines by the settlers.
8. Dispersal: Describes a process concurrent with dispossession, involving Aboriginal tribal groups being scattered and fragmented, and families separated.
9. Indirect Discrimination: An employment policy or practice, however neutral in intent, which has a negative impact on members of disadvantaged groups. A policy or practice having this impact of disproportionately excluding members of a group constitutes unlawful discrimination. The requirement of continuous service for permanent employment constitutes indirect discrimination against females who experience breaks in service during their child-bearing years.

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29. Sutton, "Land Rights and Compensation in Settled Australia," Social Alternatives, Vol 2, no.2, 1981, pp. 6-10

10. Racism: Any attitude or practice that results from attitudes or beliefs that place the members of any race into a category, or ascribes characteristics to any race that are consciously or unconsciously based on culturally induced race-related stereotypes.
11. Self-determination and self-management: "Self-determination" is the right of Aboriginal people to have power over decision-making processes on matters which affect their lives, such as the setting of priorities and the allocation of resources for Aboriginal programs and associated policy determination.

"Self-management" is a related term which is defined as the right of Aboriginal people to have managerial and administrative control over matters affecting Aborigines and their own programs. <sup>30</sup>

Self-determination and self-management should not be misunderstood to mean, respectively, immunity from the law and hopes for a separate nation.

Both the Commonwealth Government and the Victorian State Government are committed to self-determination and self-management.

12. Systemic Discrimination: A pattern of discrimination through a society, a place of employment, or within a program that is the result of pervasive and inter-related action, policies, or procedures. Race segregation in housing, access to services, and employment is a form of systemic discrimination. (See also Indirect Discrimination).

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30. Joint submission from the Working Group on Aboriginal Matters, (WGAM) Province of Victoria, Anglican Church of Australia, and Aboriginal Affairs Committee, Division of Ecumenical Mission, Synod of Victoria, Uniting Church in Australia, March 1984, p.25

## APPENDIX 2

### RECEIPT OF SUBMISSIONS

#### 1. LOCAL GOVERNMENT

Borough of Kerang  
City of Camberwell  
City of Castlemaine  
City of Colac  
City of Collingwood  
City of Echuca  
City of Fitzroy  
City of Hamilton  
City of Horsham  
City of Mildura\*  
City of Sale  
City of Shepparton \*  
City of South Melbourne  
City of Swan Hill  
City of Wangaratta  
Shire of Alberton  
Shire of Avon \*  
Shire of Bacchus Marsh  
Shire of Ballan  
Shire of Bairnsdale \*  
Shire of Belfast  
Shire of Bellarine  
Shire of Bright  
Shire of Buln Buln  
Shire of Bungaree \*  
Shire of Charlton  
Shire of Cobram  
Shire of Colac  
Shire of Daylesford and Glenlyon  
Shire of Diamond Valley

\* Provided verbal submission (at public hearings)

1. LOCAL GOVERNMENT (continued)

Shire of Dimboola  
Shire of Dundas  
Shire of Eltham  
Shire of Gisborne  
Shire of Gordon  
Shire of Hampden  
Shire of Kerang  
Shire of Lilydale  
Shire of Lowan  
Shire of Maffra  
Shire of Marong  
Shire of Mildura \*  
Shire of Mortlake  
Shire of Myrtleford  
Shire of Narracan  
Shire of Nathalia  
Shire of Numurkah  
Shire of Omeo  
Shire of Phillip Island  
Shire of Rippon  
Shire of Rosedale  
Shire of Seymour  
Shire of Shepparton  
Shire of Swan Hill \*  
Shire of Talbot and Clunes  
Shire of Tambo \*  
Shire of Tungamah  
Shire of Upper Murray  
Shire of Waranga  
Shire of Wycheproof  
Shire of Yackandandah  
Shire of Yarrawonga  
Town of Bairnsdale  
Town of Camperdown  
Town of Kyabram

ORGANISATIONS

Aboriginal Education Services \*  
 Aboriginal Hostels Ltd \*  
 Aboriginal Land Council of Victoria \*  
 Aborigines Advancement League \*  
 Anglican Diocese of Melbourne and Uniting Church,  
 Synod of Victoria - joint submission \*  
 Australian Land Rights Movement \*  
 Ballarat and District Aboriginal Co-operative Limited  
 Barmah Forest Preservation League  
 Carngham R.S.L. Sub-branch \*  
 Catholic Commission for Justice and Peace  
 Concerned Parents' Association Mildura \*  
 Council of Adult Education  
 Dandenong and District Aborigines Co-operative Society Limited  
 Kaarimba Fire Brigade District \*  
 Koorie Information Centre \*  
 Mirambeek Aboriginal Corporation \*  
 Municipal Association of Victoria  
 Narioka Recreation Reserve  
 Nathalia Agricultural Society \*  
 Nathalia and District Concerned Citizens Group \*  
 National Aboriginal Conference, Canberra \*  
 National Aboriginal and Islander Health Organisation \*  
 National Action Group \*  
 Picola Uniting Church Ladies Guild  
 Prospectors' and Miners' Association of Victoria Inc. \*  
 Robinvale District Development Association  
 Rumbalara Aboriginal Consultative Group \*  
 Rumbalara Aboriginal Welfare Consultative Group \*  
 Stratford Uniting Church (Parish of) \*  
 Victorian Aboriginal Education Consultative Group \*  
 Victorian Aboriginal Health Service \*  
 Victorian Farmers and Graziers Association \*  
 Wemen Community Group  
 Western Mining Corporation Limited \*  
 Windemere Young Farmers  
 Yorta Yorta Tribal Council \* - 43 -

3. GOVERNMENT DEPARTMENTS

Department of Community Welfare Services

Department of the Premier and Cabinet

Ministerial Advisory Committee on Multicultural and Migrant Education \*

Ministry of Aboriginal Affairs, N.S.W. \*

4. INDIVIDUALS

Ms R. Adams, Warana Beach, Queensland

Mr. J. Alexander, Brighton

Mr. D.R. Anderson, Brunswick

Mr. B. Andjelkovic, Traralgon

Cr. L. Andriske, Mildura \*

Mr. J. Ansell, Swan Hill \*

Mr. K. Atkinson, Shepparton \*

Mr. W. Atkinson \*

Mr. J. Austin

Mrs. E.J. Bamford, Morwell

Dr. D.E. Barwick, Farrer, A.C.T.

Mr. R. Bell, Horsham

Mr. P.S. Bestwick, Myrtleford

Mr. J. Bijkersma, Ballarat \*

Mr. W.J.D. Bowen, Croydon

Mrs. F.E. Boyd, Lower Templestowe

Ms W. Brabham \*

Mrs. U. Branfield \*

Mr. M. Bull, Lake Tyers \*

Mr. D. Byrne, Cobram

Mr. H. Cahir, Albert Park

Mrs. R.M. Campbell, Glen Waverley

Mr. P.A. Carroll, Cockatoo.

Mr. L.R. Cook, Numurkah \*

Mr. P. Cummings, Swan Hill \*

Mrs. J. Day, Nagambie

Ms O. Day, Rumbalara \*

Mr. B.K. Dungey, Stratford

INDIVIDUALS (continued)

Mr. P. Edwards, Swan Hill \*

Mr. B.J. Evans, MLA \*

Mr. P. Felton, North Balwyn \*

Mrs. E. Fesl \*

Ms S. Firebrace, Rumbalara \*

Mr. S. Foulkes, Carlton

Mr. J. Francese, Wangaratta

Mrs. P. Fraser, Swan Hill \*

Ms F. Gardner, Rumbalara \*

Mr. T. Garwood \*

The Rev. Canon D. Gibson, Shepparton \*

Mr. R. Grant, North Geelong \*

Mrs. E. Griffiths, Bundoora

Mrs. E. Halden, Shepparton \*

Mr. C.J.P. Hedges, Beaufort \*

Mr. K.H. Herde, Beaufort \*

Mr. I. Hickey, Swan Hill \*

Ms B. Hocking \*

Mr. D.R. Hogarty, Mt. Waverley \*

Mr. R. Howie, Melbourne

Mr. B. Hughes, Newmerella

Ms E.R. Jewson, Swan Hill

Mr. J. Johnstone, Caulfield

Ms E. Kagan, Moonee Ponds \*

Mr. E.G. Kennedy, Wycheproof

Mr. K. King, Mildura \*

Mr. K. Kitto, Croydon

Mr. W.J. Kuch

Mr. M.J. Kuilboer, Puckapunyal

Mr. J.D. Lever, Mildura

Cr. N. Lever, Mildura \*

Ms B. McCartney, Swan Hill \*

Mr. J. McCorquodale, Killara, N.S.W.

INDIVIDUALS (continued)

Mr. J. McDonald, Tongala  
Mr. W.F. McFadden, Westmeadows  
Mr. A. McIvor, Lake Corangamite \*  
Ms F. Mathysen, Rumbalara \*  
Mr. J. Morieson, Hawthorn \*  
Mr. A. Mullett \*  
Mr. S. Murray, Glenroy \*  
Mr. P. Nelson, Mildura \*  
Mr. M. Newman \*  
Mr. B. Nolan, Learmonth \*  
Mr. B. Northayne, Frankston  
Ms H. O'Brien, Porepunkah  
Mr. V.J. O'Meara, Wangaratta  
Mr. S. Pelczynski, Malvern East  
Mr. P. Pepper \*  
Mr. C. Perkins, Canberra  
Mr. P. Pinnington \*  
Mr. P. Prosser \*  
Mr. E.W. Reedy, Robinvale  
Ms J. Rinaudo, Myrtleford  
Mr. L.M. Robertson, Kyabram  
Mrs. H.B. Ronald, Toorak  
Mr. D. Rose, Swan Hill \*  
Mr. D. Rowe \*  
Mr. W. Sawyer, Burrumbeet \*  
Mr. T. Shaw, Buronga via Mildura  
Mrs. B. Simmons, Swan Hill \*  
Fr. B. Smith, Beaufort \*  
Mr. K. Smith, Myrtleford \*  
Mr. F. Stewart, Swan Hill \*  
Dr. L. Stewart, Swan Hill \*  
Mr. D. Tan, Healesville \*  
Mr. R.H. Tate, Alexandra

INDIVIDUALS (continued)

Prof. C. Tatz, Macquarie University

Mr. A.P. Taylor, Curlwaa, N.S.W.

Mr. G. Taylor, Black Rock

Ms K. Thorpe \*

Mr. R. Thorpe, Fitzroy \*

Dr. L.J. Tierney, University of Melbourne

Mr. I. Tripcony \*

Mr. J. von der Putten, Mildura

Mr. A. L. Walker, Burrumbeet \*

Dr. A. Ward, La Trobe University \*

Mr. J. Ward, Swan Hill \*

Mrs. G. Warne, Swan Hill

Mr. E. Wright, West Doncaster

Mr. N. Yarram \*





SOCIAL DEVELOPMENT COMMITTEE

FINAL REPORT

ON

COMPLAINTS PROCEDURES

AGAINST HEALTH SERVICES

---

Ordered to be printed

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EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

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Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

---

Tuesday, 31 May 1983

24. SOCIAL DEVELOPMENT COMMITTEE - The Honourable Evan Walker moved, by leave, That the Honourable K.I.M. Wright be discharged from attendance upon the Social Development Committee.

Question - put and resolved in the affirmative.

Ordered - That a message be sent to the Assembly acquainting them of the foregoing resolution and that a vacancy accordingly exists in the membership of that Committee.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

---

Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave and question - That, contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

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Wednesday, 1 June 1983

23. MESSAGE FROM THE LEGISLATIVE COUNCIL acquainting the Assembly that they have agreed to a resolution discharging the Honourable K.I.M. Wright from attendance upon the Social Development Committee and notifying that a vacancy accordingly exists in the membership of that Committee.
25. SOCIAL DEVELOPMENT COMMITTEE - Motion made, by leave and question - That Mr. Steggall be appointed a member of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

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## REPORT

The **SOCIAL DEVELOPMENT COMMITTEE**, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:

### 1.0 FUNCTIONS OF COMMITTEE

- 1.1 The functions of the Committee are "to inquire into, consider and report to the Parliament on -
- (a) any proposal, matter or thing concerned with the social development of the people of the State;
  - (b) how the life of individuals, families and communities in the State may be improved; and
  - (c) the role of Government in promoting the welfare of the people of the State - "1.

### 2.0 TERMS OF REFERENCE

- 2.1 The Social Development Committee received a reference from the Governor in Council dated 26 October 1982 to inquire into, consider and report on:-
- (a) The sources and the nature of complaints made by or on behalf of individual patients in relation to health services (whether public or private) received by such patients including complaints against health practitioners, groups or organizations, including matters related to fees and insurance.
  - (b) The mechanisms which currently exist to deal with such complaints, to evaluate their availability to the public and to assess their efficiency individually and jointly as part of an integrated system of dealing with such complaints.

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1. Parliamentary Committees Act 1968, Section 4E.

- (c) To determine any and what changes are necessary to existing mechanisms and whether any other mechanism or mechanisms either in addition to, or in substitution for, existing mechanisms or any existing mechanism should be developed to receive complaints and to provide advice to both providers and clients in relation to these matters.
- (d) To recommend a model complaints mechanism, having regard to its composition, powers, duties, functions and jurisdiction and the best method of financing any present or proposed mechanisms, the adequacy of any redress that would be available to any individual who makes a complaint; the distinction between administrative and professional functions and administrative and judicial solutions, and possible preventive measures which may be taken to remove underlying causes of common complaints.

## 2.2 COMMENT

Since the issue was found to be more complex than originally envisaged, and in order to conduct further public investigations, the Committee sought an extension to its deadline for completion of the Inquiry. This was granted by the Governor in Council on 6 March, 1984, and a new completion date of 31 July, 1984 was set.

## 3.0 BACKGROUND TO THE FINAL REPORT

### 3.1 Basic principles

On the basis of the evidence presented to the Social Development Committee, the Committee decided on several major principles in its approach to the Inquiry:

- that in response to identified public dissatisfaction it would recommend significant reorganisation and upgrading of the existing system;
- that it would not recommend the creation of a completely new, large and expensive bureaucracy to deal with health service complaints; and
- that the existing system would be built upon to embody a new mechanism with specific powers to deal with health service complaints.

### 3.2 The Interim Report

In its Interim Report the Committee considered the existing structures and mechanisms for dealing with complaints against health services. Specifically, it dealt with:

- the sources of complaints made by or on behalf of individual patients.
- the nature of complaints made by or on behalf of individual patients.
- a statement of the mechanisms which currently exist to deal with complaints.
- an evaluation and assessment of the current mechanisms in terms of their availability and efficiency.
- possible preventive measures which may be taken to remove underlying causes of common complaints.
- recommendations concerning necessary changes to existing mechanisms both as a short term improvement and development of existing mechanisms, and also as a necessary precondition to the establishment of a State-wide Health Services Complaints Office. As an aid, Chapter 4 sets out the recommendations of the Interim Report. A review of some of the issues arising from the Interim Report is presented in Chapter 5.

### 3.3 The Final Report

The Final Report should be read in conjunction with the Interim Report. The Interim Report represents important modifications and innovations to existing structures, while the Final Report outlines the proposed "model complaints mechanism".

### 3.4 The "phone-in" inquiry

Because of incomplete information available to enable the Committee to assess fully the extent, range and outcome of complaints about health services, the Committee decided to hold an "information gathering" exercise.

This consisted of a "phone-in" inquiry conducted over 3 days, April 13, 14 and 15, 1984. The results of this information-gathering research exercise are contained in Appendix 2. It should be emphasised that this analysis constitutes just one facet of a far-reaching and detailed inquiry extending over more than 18 months. The Committee's findings should be viewed in that context.

The Committee regrets that because of distortion by some sections of the media the Australian Medical Association, alone amongst all of the professional health interests, should have felt it necessary to criticise the 'phone-in exercise publicly. The Committee considers that the Australian Medical Association initially misunderstood the nature, function and objectives of the exercise, but it is noted that following discussion and clarification with the Committee, the Australian Medical Association subsequently commended and endorsed the objectives of the 'phone-in. All publicity material relating to the 'phone-in exercise issued by the Committee accurately identified its purpose in respect of the total ambit of health services, even though sections of the media regrettably tended to concentrate on the medical profession.

### 3.5 The draft Bill

Under the terms of the Parliamentary Committees Act 1968, the Committee is empowered under Section 4N (2), "to include in any report made by (the Committee) to the Parliament a draft Bill to give effect to such of the recommendations of the Committee as cannot be given effect to otherwise than by an Act." The Committee has taken advantage of this power, and a draft Bill is currently being prepared as an addendum to this Report to give effect to the Committee's proposals, for subsequent tabling in Parliament.

#### 4.0 RECOMMENDATIONS OF THE INTERIM REPORT\*

In its Interim Report the Committee recommends as follows:

- 4.1. A Committee drawn from Chief Executive Officers in the health field must be established to draft a uniform Health Complaints Report Form and common procedures for use in health care facilities and services, including a 28-day time limit for responding to a complainant. (7.3.2, 7.6.1)
- 4.2 All health care organisations and institutions, for example hospitals (both public and private), nursing homes, special accommodation houses, etc., must establish internal complaints procedures. (7.1.3, 7.3.2, 7.6.1)
- 4.3 A specific officer within all health care institutions and organisations must be responsible for administering an internal complaints procedure. (7.1.3, 7.6.1)
- 4.4 Both oral and written complaints must be recorded on the Health Complaints Report Form (as developed by Recommendation 1 above) by a specific officer responsible for administering this procedure. (7.1.2)
- 4.5 Until the proposed Health Complaints Authority is established all health care organisations and institutions (as in 2 & 3 above) must supply an annual report to the Health Commission from their records regarding the number, sources and nature of complaints received and action taken. (7.1.1)
- 4.6 Until the establishment of the proposed Health Complaints Authority the Health Commission must maintain a central register of complaints, their sources, nature, and action taken. (7.1.1, 7.1.4)
- 4.7 All health care organisations and institutions must make available to complainants information concerning the various options open to them in pursuing their grievance. (7.3.1.)
- 4.8 The Health Commission must publish and distribute a pamphlet describing the current complaints mechanisms.

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\* Footnote: The numbers in parenthesis refer to Interim Report paragraph numbers.

- 4.9 Information concerning current mechanisms and procedures for lodging and pursuing complaints must be made available in languages of the major non-English speaking groups. (7.2.2)
- 4.10 If an individual is unable for various reasons to lodge a complaint on his or her own behalf, then another person may lodge a complaint on behalf of that individual and must be advised of complaints procedures. (7.3.3, 7.6.1.)
- 4.11 Those providing health care services must undertake a major review of all public forms and documents involving patients with a view to rationalisation and simplification and the removal of sources of misunderstanding and confusion. (5.1.2, 5.1.3, 5.1.4, 7.2, 7.2.1)
- 4.12 Provision must be made for translation or interpretation of forms and documents for those of non-English speaking backgrounds. (7.2.2)
- 4.13 Health Funds must simplify and clarify information regarding the level of cover provided by them to their members. (5.6.2, 5.6.3)
- 4.14 The Ministry of Consumer Affairs must define its jurisdiction in the investigation and prosecution of health complaints matters, and set it out in full clear guidelines. (7.5). These guidelines must be available in the languages of the major non-English speaking groups. (7.2.2)
- 4.15 Where any matter coming before the Ministry of Consumer Affairs is considered to be outside the jurisdiction of the Ministry, the Ministry must refer the complaint in the first instance directly to the relevant statutory authority or appropriate registration board.
- 4.16 The Health Commission must clarify its role in the licencing, supervision, inspection and investigation of Special Accommodation Houses, provide information to proprietors and residents on that role, and ensure that sufficient resources are made available by the Health Commission to carry out that responsibility. (7.3.7)

- 4.17 Community representatives (that is, individuals who are not and have never been registered as practitioners by the particular statutory board) must be appointed to the boards. Such Community representatives should sit on any complaints sub-committee or council that may be established by a board. (5.2.2, 7.7)
- 4.18 Boards must provide the staff and resources to investigate all complaints properly and report their findings to complainants within 3 months of the lodging of the complaint. (7.7.2)
- 4.19 The differing powers provided to the various boards must be reviewed by the Health Commission with a view to ensuring a greater consistency in their areas of responsibility and authority. (5.2.2, 7.7.1)
- 4.20 All Boards must have the powers to initiate investigations rather than only responding to specific complaints. (7.7.3)
- 4.21 All licensing boards and registration bodies for health care professionals must be directly responsible to the Minister of Health.
- 4.22 Boards which have the power to hear complaints must specify and make freely available their procedures to complainants.
- 4.23 All health service practitioners must be required to display in public reception areas the fees usually charged for standard or common procedures. (5.5.1)
- 4.24 Health Insurance Organisations must provide their contributors with written information on request concerning their refunds on health services. (5.5)

#### REFERENCES TO THE PUBLIC TRUSTEE IN THE INTERIM REPORT

- 4.25 The Committee is concerned that certain references in the Interim Report (pp. 29; 42-3) to the Office of the Public Trustee\* could be misinterpreted as a fact rather than as the allegation of a witness. It was not the intention of the Committee to pass judgment on the allegation but rather to highlight it as one of the examples of complaints - justifiable or otherwise - that could only be resolved through the effective mechanism of an independent health service complaints structure.

The Committee is publishing in Appendix 3 a statement by the Public Trustee on the references to his Office in the Committee's Interim Report.

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\* Footnote: See Appendix 3 for the full statement by the Public Trustee.

## 5.0 MATTERS ARISING FROM THE INTERIM REPORT

### 5.1 Definition of Health Services

A major problem throughout the Inquiry has been one of definition, and to some extent the Committee has had to make an arbitrary ruling in its definition of a "health service". It has proposed, for the purposes of the current Inquiry, to define health services as:

- . firstly, those providers who offer diagnosis and treatment to improve health, and who are licensed to practise their profession through the following statutory authorities:
  1. Medical Board of Victoria.
  2. Specialist Practitioners Qualification Committee of the Medical Board.
  3. Dental Board of Victoria.
  4. Specialist Practitioners Qualification Committee of the Dental Board.
  5. Advanced Dental Technicians Qualifications Board.
  6. Dental Technicians Licensing Committee.
  7. Chiropractors and Osteopaths Registration Board.
  8. Chiropodists Registration Board.
  9. Dietitians Registration Board.
  10. Optometrists Registration Board.
  11. Pharmacy Board.
  12. Physiotherapists Registration Board.
  13. Victorian Nursing Council.
  14. Victorian Psychological Council.
  
- . Secondly, "health services" include health care institutions such as hospitals (public and private), nursing homes, specialist clinics and other such health care institutions, all of which are required to register, be certified or licensed by the Health Commission of Victoria.

The Committee is well aware that such a definition excludes what may be termed "fringe" health services or those not answerable to the Minister of Health through a statute of registration. Thus, for example, services

provided by lens grinders, hearing aid suppliers, health food shops, beauty salons or fitness centres do not come within the scope of this report. Some of these "fringe" health services are currently controlled by commercial and consumer legislation and thus are involved in an alternative mode of regulation. The Therapeutic Goods and Cosmetics Bill currently before the Legislative Assembly also makes provision for control of goods for therapeutic use.

In brief, the Committee has been at pains to develop a model complaints mechanism. As such, it is a framework which is non-specific. It can be added to as further occupations in the health care field become professionalised and are enforced by statute to register their members. Or indeed, other significant aspects of health care, such as insurance, can be included in the model. Such decisions would be a matter for the Minister to determine. The model itself is flexible and versatile, and incorporates features of other similar mechanisms both in Victoria and in other States.

## 5.2 Varying powers and functions of existing professional statutory boards

The Committee is aware of the lack of uniformity of powers and functions of professional statutory boards and authorities. It believes that this is a matter for urgent consideration. The Committee was informed by the Health Commission that the existing statutory boards fall into three categories:

'1. The longer established Boards having extensive control over professional conduct through regulation and having extensive investigatory powers. The Medical Board, the Dental Board and the Victorian Nursing Council comprise this group. Legislation covering this group is similar in that it provides for extensive investigatory and disciplinary powers. The Medical Practitioners Act provides:

Section 9 - To refuse registration to:-

- (a) a person convicted of a indictable offence;
- (b) a person not of good character; and
- (c) an inebriate.

Section 16 - For the Board to conduct an inquiry of a complaint made to the Board concerning professional conduct.

Section 17 - To remove from the Register:

- (1) (a) a person convicted of an indictable offence;
- (b) an inebriate;

- (2) a person who in the opinion of the Board has acted unprofessionally in Victoria or elsewhere;
- (7) where the person has been found guilty of infamous conduct in a professional sense that does not warrant deregistration the Board may:-
  - (a) reprimand;
  - (b) suspend his registration for a period.

The Board, in its information pamphlet to doctors, states that "it is impossible to publish ethical rules to cover all situations but, in general, a doctor in the practice of his profession should maintain a standard of conduct which would be acceptable to his colleagues of good repute and competence.

The Board's responsibility is to assess whether there has been a failure and, if so, the degree of failure in observing appropriate standards and to decide whether it falls below accepted professional standards".

The Dentists Act provides in:-

Section 20 - that a dentist must be of good character.

Section 25 - any person who:

- (a) contravenes the Act or Regulations;
- (b) is guilty in connection with the conduct of dental practice of dishonest, fraudulent or immoral conduct;
- (c) suspended or deregistered in another state - may be reprimanded, fined, suspended or deregistered.

The Australian Dental Association (Victorian Branch) has defined their Code of Ethics as including:-

"Each member should be imbued with ethical ideals and should at all times uphold and maintain the honour, integrity, status and advancement of the dental profession. The interests of his patients and the members of his profession should be his highest consideration and he shall be at all times a law abiding citizen."

The Nurses Act provides in:-

Section 19 (1) (c) that a nurse must be of good character.

Section 23 (1) Registration can be suspended or cancelled if a person's

- (a) registration was obtained by fraud;
- (b) qualification is withdrawn; [if a person is]
- (c) convicted of an indictable offence; [if a person]
- (d) commits an offence against the law;
- (e) commits an offence against the regulations.

The Act also provided for investigatory powers.

These three Boards act on specific complaints made to them.\* Ethical and professional misconduct can be specifically prescribed against in certain circumstances, e.g. advertising, whilst other aspects of a more nebulous kind cannot, e.g. aspects of overservicing.

2. The Pharmacy Board is the second category of Statutory Boards. It is different from the other Boards in that it has extensive inter-relations with pharmaceutical professional associations and the Pharmacy College in regulating all aspects of pharmaceutical practice, setting educational standards and registering pharmacists. In relation to professional conduct the Board has powers over advertising, drug dispensing and premises. Unlike other Boards [except the Medical Board] it has a proactive investigatory role.

The Pharmacists Act provides in:-

Section 18 (1) that the Board may conduct an investigation concerning the conduct of a pharmacist;

(3) that if a pharmacist is:

- (a) convicted of an indictable offence;
- (b) physically or mentally incapable;
- (c) addicted to drugs or alcohol;
- (d) convicted under the Poisons Act or this Act;
- (e) guilty of incorrect advertising or conduct discreditable to a pharmacist.

The Board may reprimand, order to pay costs of inquiry, order an undertaking to abstain from some specific conduct, fine, suspend or deregister such person.

3. The remaining registration boards include the Dental Technicians and Advanced Dental Technicians, Dietitians, Optometrists, Psychologists, Chiropodists, and Chiropractors and Osteopaths. With the exception of the Psychologists and Chiropractors, the legislation of all these Boards is similar. All these relevant Acts empower the Registration Boards to cancel or suspend registration after holding an inquiry for professionals convicted of an indictable offence or convicted of an offence against the Act and Regulations, if registration is obtained by fraud, if qualifications are withdrawn or the person is not of good character.

The Optometrists Act embellishes this last point to include a person guilty of infamous conduct in professional respects. Disciplinary powers are invoked generally after complaints have been made direct to the Registration Board or a case has been proved by the courts or action through Consumer Affairs.

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\* Footnote The Committee notes that the Medical Board of Victoria now has the power to investigate the conduct of medical practitioners where the Board deems it desirable to do so.

The Psychological Practices Act extends the disciplinary powers of the other acts to provide for admonishing, reprimanding, fining, suspending or cancelling registration.

The Chiropractors and Osteopaths Registration Board is the only Board without specific disciplinary powers in relation to professional conduct although a chiropractor or osteopath must be of "good character" to be registered. There is provision in the Act for the Governor in Council, on the recommendation of the Board, to make regulations regulating and controlling the conduct of both professionals. This has not been done due to the difficulty in framing such legislation and over concern that there may be inadequate legislative backing.

Legislation for most Registration Boards in category three appears to have a common base. Over the years amendments to individual legislation have resulted in a lack of commonality and uniformity among them. Registrars from Boards situated away from Commission headquarters have also expressed a desire for a contact point in the Commission to effect co-ordination of business.<sup>2</sup>

### 5.3 A definition of "complaint"

The Interim Report did not make an explicit definition of a "complaint", preferring rather to accept the public understanding of what constitutes a complaint in its day-to-day use of health services. Its rationale for this method lay in the terms of reference, which directed the Committee to inquire into the "nature of complaints made by or on behalf of individual patients in relation to health services". Clearly, complaints range from the trivial to the serious, and in its Interim Report the Committee gives examples of the more serious public complaints (Interim Report, Section 5.0 "The Nature of Complaints").

The Committee criticised the current systems and practices for dealing with complaints, and stated that a major reason for the lack of comprehensive information is the different ways of treating complaints made in person, those made by telephone, and those made in writing. The Committee commented that:

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2. Health Commission of Victoria; Ref.No.83/279; 6/9/83; Professional Statutory Boards. Matters within [ ] are Committee additions.

"Many statutory and professional bodies insist on a written complaint before proceeding with their idiosyncratic mechanisms of inquiry. This places at a disadvantage those who lack the skills, confidence, possession of English, physical or mental abilities to state their complaints in writing."<sup>3</sup>

The Committee is of the opinion, and recommended (4.4 above) that both oral and written complaints must be recorded on a Health Complaints Report Form.

While it is clear that complaints made in person or by telephone may appear to be resolved at the time of complaint, the Committee concurs with the Minister of Health (Victoria)<sup>4</sup> that there is merit in such complaints still being recorded on complaint forms, for the protection of all parties concerned.

In drafting such a form it is important that there is adequate consultation with all representative groups of health service providers.

#### 5.4 Information for complainants

One of the major findings of the Interim Report was that members of the public lacked information and knowledge about the complaints mechanisms currently in place. The Committee considers that all complainants have the right to information about such mechanisms, and to that end, all health care organisations and institutions should be obliged to provide complainants with the relevant information. This information must be made available in writing, and the recommended pamphlet from the Health Commission (4.8 above) should prove adequate. This would not preclude additional oral advice.

#### 5.5 Lodging a complaint on behalf of another individual

The Committee recommended (4.10 above) that if an individual were "unable for various reasons" to lodge a complaint on his or her behalf, then another person may lodge a complaint on behalf of that individual. This recommendation is intended to include:

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3. Interim Report, 7.1.2., pp 20-21.
  4. Letter to Chairman of the Committee, 8/3/84.

- a person who is capable of lodging a complaint - but was "unable for various reasons" to do so. Thus a third person may be authorised to act as an agent of the complainant, and lodge the complaint on his or her behalf.
- a category of person who is not only "unable" but "incapable" of exercising their right to complain. In such a case the Committee recommends that the Director of the Health Services Complaints Office (see 8.0), as an independent person in a position of authority, should have the power to decide if a complaint is to be lodged on behalf of that individual.

## 5.6 Health Commission action

The Committee welcomes the general response to its Interim Report.

- 5.6.1 Professional associations, and statutory boards under the administration of the Minister of Health were all asked to comment on the Interim Report. The Minister has informed the Committee<sup>5</sup> that all these organisations have expressed a willingness to co-operate in the establishment of complaints procedures, and to comply with any requirement for the presentation of appropriate complaints reports on an annual basis.

Since the Interim Report the Minister has advised the Committee that the Mental Health, Mental Retardation, Hospitals and Public Health Divisions of the Health Commission are developing complaints mechanisms and assembling relevant information material.

- 5.6.2 It is important that Health Commission staff currently preparing printed matter for circulation to health services concerning existing complaints mechanisms, should be made aware of the recommendations included in this Report.

## 5.7 Procedures to be transferred to the proposed Health Service Complaints Office

This Report recommends the setting up of a new complaints mechanism, a Health Service Complaints Office and Health Boards Appeals Tribunal.

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5. Letter to Chairman of the Committee, 22/3/84

Following recommendations of the Interim Report the Committee reaffirms that certain functions should be transferred at the earliest opportunity to the Health Service Complaints Office for this office to fulfil its recommended role, and that the Health Commission must provide the newly established office with any relevant material collected in the interim period following the publication of the Interim Report, and the setting up of the new mechanism. Such functions include:

- receipt from all health care organisations and institutions of an annual report from their records detailing the number, sources and nature of complaints received and action taken;
- maintenance of a central register of complaints, their sources, nature, and action taken.

## 6.0 INSURANCE MATTERS

6.1 The Committee understands that one condition of the insurance policy at present held by hospitals is notification of any incident which may lead to litigation. If information regarding "incidents or complaints" is given by hospitals to the proposed Health Services Complaints Office (see 8.0 below), without the knowledge of the insurer, such action may void the policy. In order to avoid jeopardising hospital insurance cover the Committee recommends that the reporting mechanism outlined in the Interim Report should embody a provision that the insurer is similarly notified of such incidents.

### 6.2 A no-fault medical misadventure scheme

The Committee recommends that the Minister of Health inquire into the feasibility of introducing a no-fault medical misadventure scheme as outlined in the South Australian Sax Committee Report.<sup>6</sup>

While the Committee makes recommendations below (8.0, 9.0) regarding the setting up of a model complaints mechanism, this model does not preclude negligence litigation for a complainant. This pathway is not considered as a preferred complaints mechanism. Further associated problems are detailed in the Interim Report. (Section 7.10, 7.10.1).

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6. Report of the Enquiry Into Hospital Services in South Australia, Chairman: Dr Sidney Sax, Adelaide, September 1983.

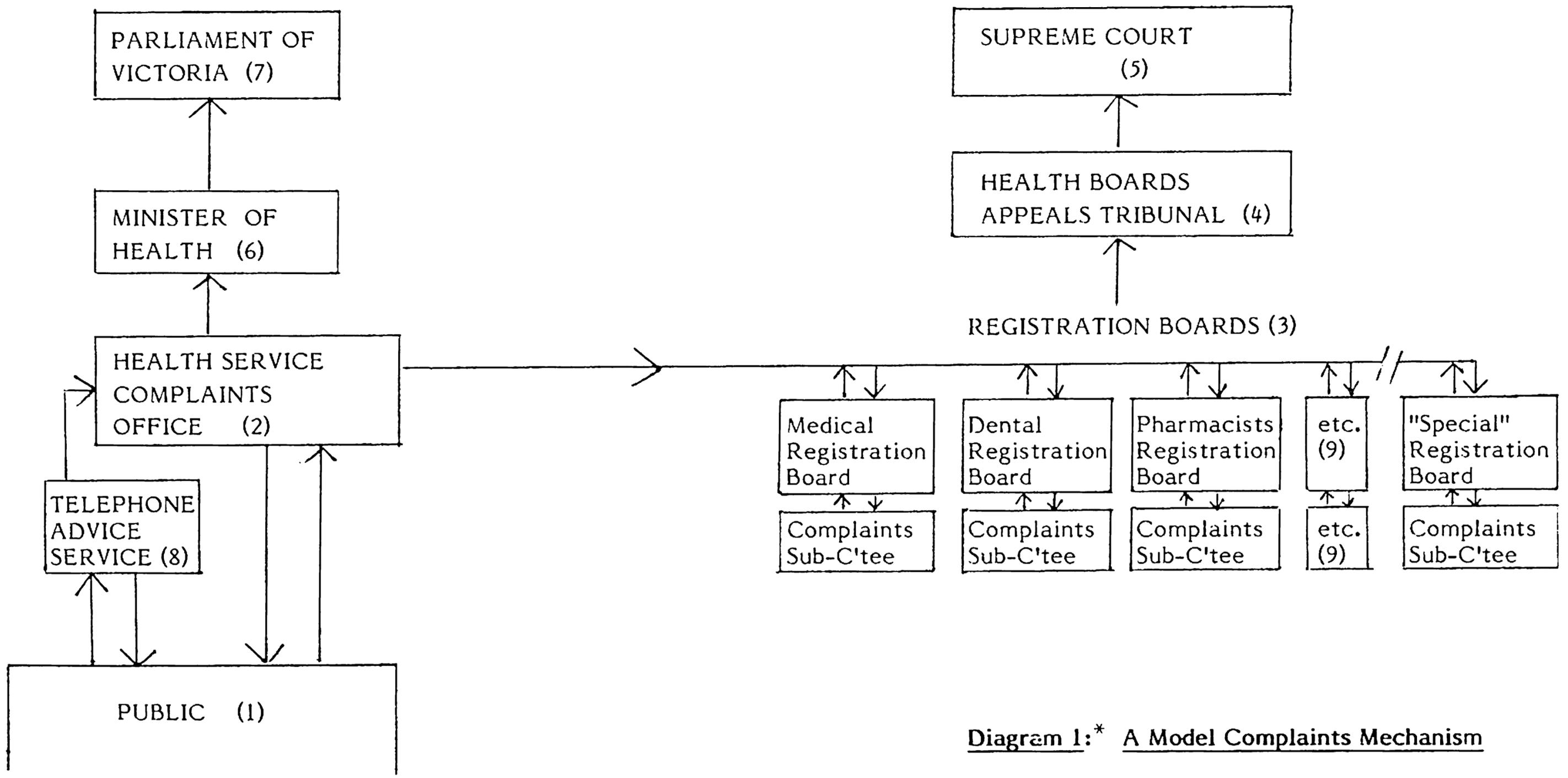
## 7.0 THE PROPOSED "MODEL COMPLAINTS MECHANISM"

7.1 The Committee has received ample evidence to indicate that the volume of complaints and the inadequacy of existing procedures justify substantial improvements to complaints mechanisms.

7.2 It is recommended that an office be established to which all complaints may be initially referred, and which, in conjunction with the present licensing and registering authorities, will have all complaints processed to the resolution or recommendation stage.

7.3 A three-tier structure is proposed, with a Health Service Complaints Office forming the central unit, and two further tiers completing the entire health complaints mechanism. These further tiers would consist of the existing registration authorities and the Health Boards Appeals Tribunal.

7.4 A diagrammatic presentation of the proposed model complaints mechanism is presented in Diagram 1:



**Diagram 1:\*** A Model Complaints Mechanism

**\* FOOTNOTE:**

- (1) It is envisaged that 90 percent of all complaints will be dealt with to the satisfaction of all parties at the point of service. However, members of the public will have automatic direct access to the Health Service Complaints Office.
- (2) See Chapter 8.0.
- (3) See Section 8.5.
- (4) See Chapter 9.0.
- (5) See Section 9.6.
- (6) The HSCO would be established within the framework of the Ministry of Health.
- (7) The HSCO would be accountable, through Annual, or more frequent Reports to the Parliament of Victoria.
- (8) See Section 8.2.4.
- (9) All other current (See 5.1 above) and future Boards will be similarly constituted.

## 8.0 THE HEALTH SERVICES COMPLAINTS OFFICE

The Health Services Complaints Office (HSCO) will be the most important element of the new complaints structure. It would be responsible for receiving and carrying out the preliminary inquiry into all matters which had been reported to it directly, or which had passed through the internal complaints systems of authorities and organizations within its auspices. While the office will be established within the framework of the Ministry of Health, it would nevertheless be accountable to the Parliament of Victoria to which it is required to make an Annual Report. The Director of the HSCO would have the discretionary power to publish further relevant Reports should they be necessary. Reports would be tabled in Parliament by the Minister of Health.

### 8.1 General Functions

The Office will:

- . ensure that as far as possible the first point of contact between those with grievances and the service providers will be at the point of service (e.g. hospital, clinic, nursing home). This will allow the individual, organisation or body to have the right of reply to the complaint, and the majority of grievances to be redressed at this stage;
- . undertake a preliminary inquiry, and if the office considers that the complaint requires further investigation, refer the consumer's complaint together with its own preliminary report thereon to the most appropriate registration board or other authority, for subsequent investigation and action;
- . be accessible to the public, accepting complaints directly from the public, from organisations and institutions, and from any other source;
- . provide a one-point register of complaints. As such, this body would be able to monitor, review and report on the number, type, processing and action taken concerning all received health complaints;

- consider the pattern of complaints received, and identify underlying system problems, suggesting procedural changes or more fundamental structural reforms;
- be responsible for ensuring that appropriate publicity throughout the State is provided to inform both consumers and health service providers of the procedures available for the satisfactory resolution of grievances. In this respect the HSCO would also have an important educative function; and
- be empowered to visit hospitals and other health care institutions to monitor complaints and documentation procedures, and to interview such officers as may be necessary.

## 8.2 Structure

8.2.1 The HSCO would be established with an appropriately qualified Director, supported by a small staff who would be assisted by a back-up panel of legal and professional experts providing a source of advice and interpretation regarding the facts and circumstances giving rise to complaints.

### 8.2.2 Preliminary Investigation Unit

The most important role of the Office will be to act as the preliminary investigation unit: it would be charged with the function of examining each complaint to the stage which will enable the Director either to finalise the investigation or to proceed with any of the other options hereafter provided in the Report.

### 8.2.3 The Conciliation Unit

In addition, there would be a Conciliation unit as a small adjunct to the HSCO which could prove useful in those cases where the chief cause of complaint appears to be a breakdown in communication. Evidence to the Committee, including that from the 'phone-in exercise, reveals that communication breakdown represents a substantial proportion of reasons given for complaints.

#### 8.2.4 Telephone Advice Service

The Conciliation Unit would provide one co-ordinator for the Telephone Advice Service, a volunteer service operating from the homes of volunteers, providing a public advisory network. A model for such a service is provided by the Sax Committee Report.<sup>7</sup>

This service would provide an anonymous, yet friendly "ear" for dealing with patient grievances. The co-ordinator would run special training programs which volunteers would have to undergo before being rostered to take calls. This training would introduce volunteers to the broad structure of the health system, the different functions of different institutions and professions, the administration and regulation of the system and the legal framework. The service would be provided by a group of 20 volunteers who are appropriately resourced. These volunteers should, where possible, reflect the language and cultural diversity of the community.

Volunteers should be mature and experienced, and possess patience. If the complaint cannot be satisfactorily concluded on the 'phone, then either the complainant or the volunteer, by agreement, may refer the matter to the HSCO for preliminary investigation. A brief summary of each complaint call together with follow-up action would be recorded by the volunteer. This information would be forwarded to the co-ordinator who would collate and classify the cases for management, training and HSCO report purposes.

It is suggested that the service could be staffed by a combination of nominees from established welfare agencies, together with individuals selected from public response to advertisement. A two year trial period of such a volunteer scheme should be imposed with a subsequent review to assess the desirability of full-time paid appointments.

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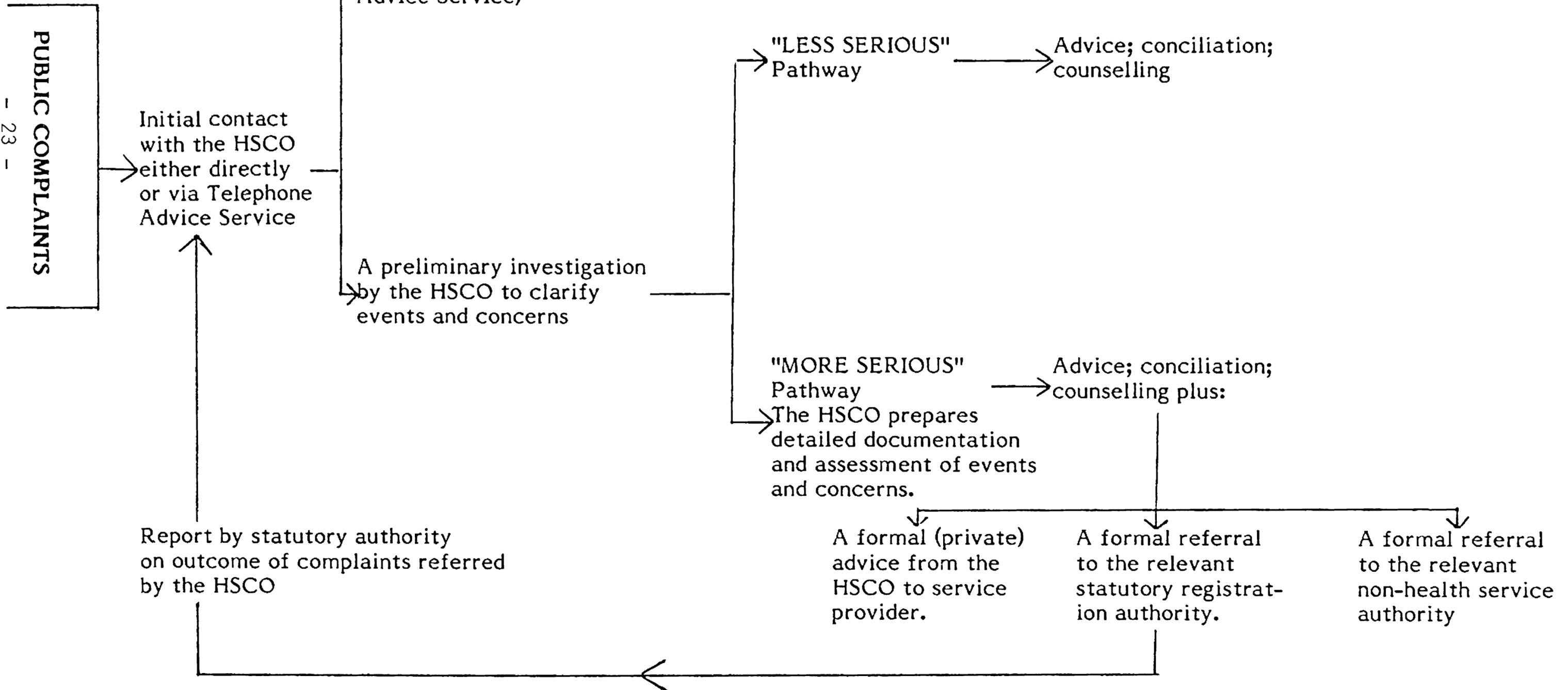
7. Report of the Enquiry Into Hospital Services in South Australia,  
Chairman: Dr. Sidney Sax. Adelaide, September 1983. pp.104-5

### 8.3 HSCO Outline and Principles

The handling of each complaint will be dependent on the circumstances of each case. It is not appropriate to prescribe a particular routine. However, in order to explain how it is intended the HSCO should operate, the different procedures and outcomes that will encompass most complaints are illustrated in Diagram 2 and described below:

- The majority of cases will probably be resolved simply and directly.
- If a complaint cannot be resolved simply and directly then the HSCO will conduct a preliminary investigation to determine the gravity of the complaint and whether the matter should be referred to the most appropriate registration board or other authority for detailed investigation and resolution. In such a case discussion should take place between the Director of the HSCO and the Chairperson of the appropriate authority.
- The HSCO shall receive from each registration board or other authority to which it has referred complaints for detailed investigation, a report on the outcome of that investigation and the nature of its resolution. Such interim or final report should be provided within a specified period - say three months from the date of referral to the board or authority.
- The HSCO shall embody in its Annual Report, or in such other reports as may be made from time to time, an overview of the total complaints mechanism.

Diagram 2: Outline of the HSCO Procedures



## 8.4 Procedures for Dealing with Individual Complaints

### 8.4.1 First contact with the HSCO

At their first contact with the HSCO, complainants will be urged to resolve the problem directly with the professional or service provider involved, if they have not already done so. However, complainants will be able to pursue the complaint through the HSCO whether or not they have attempted to resolve it directly with the provider.

An early step in dealing with a complaint will be to clarify the facts of the matter and place those facts within the context of accepted practices and standards.

### 8.4.2 The investigation of "less serious" complaints

The Committee believes that most calls could be resolved in the course of the first contact. However others will require some further investigation, which may involve the HSCO staff speaking by 'phone to the service provider concerned or requesting a written response to the complaint.

In many cases the grievance may be resolved through clarification, advice and better understanding.

Following an investigation action may include:

- conciliation. This may involve an apology or the facilitation of better communication so that understanding may be reached; and/or
- counselling. In some cases careful counselling and further referral may be appropriate, for example, the HSCO may form the view that the complaint arises from unrealistic expectations on the part of the patient.

### 8.4.3 The investigation of "more serious" complaints

Where the HSCO forms the opinion that the complaint is potentially more serious, detailed investigation and assessment may be necessary. The HSCO will handle such cases according to the nature of the apparent transgression and the quality and reliability of the information available to the HSCO.

When investigating more serious complaints an additional series of sanctions will be available to the HSCO:

- . issuing formal advice to the health service provider. Such a formal advice may take the form of a warning in a private letter. However, in the public interest the Director of the HSCO will have the power to mention names in the Annual Report to Parliament;
- . making a formal referral to a statutory agency. Such a referral may be to the relevant professional registration board, or to the Health Commission for appropriate action. The HSCO will make a formal referral when it believes a prima facie case exists for further investigation.

Where the HSCO is of the view that the existing law on any aspect of the current system is unsatisfactory, then it may recommend to Parliament an appropriate change in that law.

## 8.5 The Role of Statutory Boards and Authorities

8.5.1 It is recommended that the functions and powers of each of the statutory boards and the other authorities concerned with the examination of complaints and grievances against their registered members be amended in accordance with the recommendations which will later form an addendum to this Report.

### 8.5.2 Board hearings of complaints

It is recommended that a special sub-committee designated for this purpose by the relevant registration board or authority be established to hear each case as presented by the HSCO.

The structure of such a complaints sub-committee would consist of two Board members (excluding the Chairperson of the Board), and one consumer representative nominated by the Director of the HSCO from a panel of names maintained by the HSCO.

The complaints sub-committee of the relevant board would hear the case as presented by the HSCO. Its decision would be passed on to the full Board for ratification and appropriate action. The results of the Board's inquiry would in all cases be transmitted to the Director of the HSCO in a full written report.

## 8.6 The "Special Board"

It is recommended that a "Special Board" be set up to hear complaints against individuals not subject to individual registration, and for those institutions which, though registered, do not have their own specific statutory board or authority.

Membership and all other matters pertaining to such a "Special Board" shall be the responsibility of the Minister of Health. The mechanisms for service complaints and appeals for those registered with the "Special Board" shall be consistent with those for any other registration board or council.

## 8.7 Professional Associations

Whilst the professional associations do not have a statutory role in the health complaints mechanism, they nevertheless do have an important part to play in the resolution of complaints and in most cases are well equipped to do so effectively.

It shall be the responsibility of the HSCO to encourage and assist these professional associations in this role by assisting with the development of guidelines and advice on methods to improve existing systems.

## 8.8 Referral to alternative statutory bodies

The Director would have the discretionary power to refer to appropriate bodies, authorities or departments those complaints which clearly come within their ambit.

## 9.0 THE HEALTH BOARDS APPEALS TRIBUNAL

There shall be established a Health Boards Appeals Tribunal which shall be empowered to hear appeals from either parties to a dispute against any decisions of registration boards or councils. The same provision as that set out under 5.5. ("Lodging a complaint on behalf of another individual") would apply to the HSCO Director's role in the lodging of appeals to the Tribunal. It is anticipated that the Tribunal would have a relatively small work load, and therefore will only be constituted as provided hereunder prior to the hearing of each case.

### 9.1 Composition

The Tribunal would consist of three persons:

- (a) the Chairperson to be a County Court Judge;
- (b) the Chairperson of the appropriate professional Board or Council, or a nominee of that Chairperson; and
- (c) a consumer representative nominated by the Minister of Health from a panel of names maintained by the HSCO.

9.1.1 When requested by an appellant as the originator of a complaint the Director of the HSCO will present the case to the Tribunal on behalf of that appellant (institution, practitioner, or consumer). If appellants so desire they may present the case themselves or, with the prior approval of the Tribunal, they may be represented by their professional association.

### 9.2 Jurisdiction

The Tribunal will be empowered:

- to direct the relevant registration authority to review their findings in a particular case, and make a report to the Tribunal within six months from the date of the direction;
- to uphold the findings of the relevant registration authority;
- to uphold the appeal against those findings;
- to vary the disciplinary measure or penalty imposed by the registration authority in accordance with the findings of the Tribunal.

### 9.3 Procedures

The Committee recommends that the following procedural powers are necessary for the proper and efficient performance of the Tribunal. That the Tribunal:

- (a) not be bound by the rules of evidence;
- (b) not permit legal representation unless approved by all parties to the complaint;
- (c) be empowered to administer an oath or affirmation;
- (d) be entitled to receive all documents and material relevant to the hearing from the HSCO, registration boards or any other authority or person, and should be empowered where necessary to issue a subpoena for such documents or material subject to the requirements of professional privilege;
- (e) be empowered to adjourn proceedings;
- (f) be empowered to call its own witnesses;
- (g) be empowered to proceed in the absence of witnesses or the respondent;
- (h) would permit parties appearing before it to have the right to call oral and written evidence and to question witnesses;
- (i) proceedings would generally be held in private but that the Tribunal would have the discretion to open proceedings where necessary in the public interest - a power to prohibit or limit publication or proceedings would, in that case, apply; <sup>8</sup>
- (j) be required to give reasons for any decision;
- (k) have power to award costs based upon the estimated expenditure incurred by the Tribunal and those associated with its hearing of the case if, in its opinion, the appeal were frivolous or vexatious or for any other reason.

These powers have been designed to give the Tribunal the maximum flexibility in the determination of all matters appropriately whilst preserving the fundamental rights of all parties.

### 9.4 Appeals

A Tribunal decision will be subject to appeal to the Supreme Court only upon a question of law. This appeal would not be a re-hearing. Any aggrieved party may so appeal within a period of 28 days from the date of the final decision of the Tribunal.

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8. See: NSW Law Reform Commission Report, Complaints, Discipline and Professional Standards, 1982, p. 80.

## 10.0 METHODS OF FINANCING THE PROPOSED "MODEL COMPLAINTS MECHANISM"

The Committee was directed to inquire into "the best method of financing any present or proposed mechanisms", and consequently recommends the following:

### 10.1 Tribunal Application Fee

An application fee of \$20 will be imposed on each appellant lodging an appeal before the Tribunal. The Tribunal would have the discretion to waive or refund the fee if, in the opinion of the Tribunal, the imposition of such a fee would constitute undue hardship.

### 10.2 Contribution from Health Services and General Revenue

It is recommended that any contribution to cover the cost of the HSCO either in part or in full should be apportioned between both the private and the public sectors. Accordingly, the Committee recommends that a levy be imposed upon all practitioners and institutions who are currently required to pay some form of registration or licensing fee in order to subsidise the cost of the health complaints mechanism. For example, it is estimated that a levy representing 15 per cent of the current registration and licensing fees for all professional persons and institutions currently requiring registration would produce one-third of the gross expenditure of the HSCO and related services. On this basis it would not be unreasonable for the remaining cost of the service to be provided out of General Revenue.

### 10.3 Review of Levy

The Committee believes that at the end of two years there should be a review of the percentage levy from the various professional groups and/or institutions, and the breakdown of contribution between the private and public sectors. The purpose of the review should be to adjust the contribution so that it accurately reflects the contribution base relative to the proportionate number of substantial complaints that come from each area.

#### 10.4 Cost Saving Advantages

As some of the existing functions of the Health Commission of Victoria, statutory boards and authorities in relation to the hearing and investigation of complaints will be transferred to the newly established HSCO, it is expected that there will be some cost saving factor in areas of existing expenditure.

## 11.0 RECOMMENDATIONS

### Principal recommendation:

11.1 That a model complaints mechanism be established to consist of:

- (a) a Health Services Complaints Office,
- (b) health service boards, councils and authorities,
- (c) a Health Boards Appeals Tribunal.

### (a) The Health Services Complaints Office

11.2 That the Minister of Health present the Annual Report of the Health Services Complaints Office to Parliament in accordance with normal statutory provisions. (8.0)\*

11.3 That the general functions of the Office include:

- ensuring, when appropriate, that service providers and complainants were both aware of, and had discussed the grievance;
- undertaking preliminary inquiries and, when appropriate, referring them to the pertinent authority;
- being fully accessible to the public;
- maintaining a centralised register of complaints;
- consideration and comment on complaint mechanism changes;
- ensuring appropriate publicity;
- monitoring the complaints and documentation procedures of institutional health service providers. (8.1)

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Footnote: \* Numbers in parentheses refer to the preceding chapter or section

- 11.4 That full-time staffing levels remain limited in number, with assistance from a back-up panel of legal and professional experts (8.2)
- 11.5 That the functional elements of the Health Services Complaints Office include:
- . an investigation unit;
  - . a conciliation unit;
  - . a telephone advice service. (8.2)
- 11.6 That the procedural mechanism of the Health Services Complaints Office include:
- . initial advice to complainants to seek resolution of grievances through direct contact with the service provider, without prejudice to lodging a complaint directly with the office; (8.4)
  - . the conducting of a preliminary investigation where there is no direct resolution of the grievance; (8.4)
  - . referral of matters needing detailed investigation and resolution to the most appropriate registration board or other authority; (8.4)
  - . receipt of reports on matters referred to such boards or other authorities by the HSCO. (8.5)
- 11.7 That the powers of the Health Service Complaints Office include:
- . the power to visit hospitals and other health care premises to monitor complaints and documentation procedures, and to interview such officers as may be necessary; (8.1)
  - . the power to have access to information relevant to a preliminary investigation; (8.3)
  - . the power to receive a report from any registration board or other relevant authority on any matter referred to it, within a specified period; (8.3)
  - . the power to issue formal advice to a health service provider; (8.4)

- the power to publish in the public interest details of any matter relating to the exercise of its functions or of any case which has been investigated, including names where appropriate;(8.4)
- the power to make a formal referral of any grievance to the relevant professional registration board, to the Health Commission, or to alternative statutory bodies as appropriate. (8.4, 8.8)

(b) The present licensing and registering authorities

11.8 That the legislation providing for the functions and powers of existing statutory boards and authorities currently concerned with health services be reviewed, to ensure uniformity. (8.5)

11.9 That, on receipt of a referral from the Health Services Complaints Office, the procedures of boards and authorities be:

- the establishment of a prescribed sub-committee to hear complaints against registered members;
- a detailed inquiry into the complaints, and report to the full board or authority for ratification and appropriate action;
- the delivery of a full written report to the Director of the HSCO, within the period of time nominated by the HSCO. (8.5)

11.10 That the membership of the recommended complaints sub-committee consist of:

- two members of the board or authority;
- one consumer representative nominated by the Director of the HSCO from a panel of names maintained by the HSCO. (8.5)

11.11 That a "special board" be established to hear complaints against individuals not subject to individual registration, and for those institutions which, though registered, do not have their own specific statutory board or authority. (8.6)

(c) The Health Boards Appeals Tribunal

- 11.12 That a Health Boards Appeals Tribunal be established which would sit, as required, to hear appeals from parties to a dispute against decisions of registration boards or councils. (9.0)
- 11.13 That, under circumstances in which an individual is not only unable but also incapable of lodging and pursuing an appeal, the Director of the HSCO should have the power to decide if an appeal is to be lodged on behalf of that individual. (9.0, 5.5.)
- 11.14 That the membership of the recommended Tribunal consist of:
- a Chairperson (County Court Judge or equivalent)
  - the Chairperson of the appropriate professional Board or Council, or a nominee of that person
  - a consumer representative nominated by the Minister of Health from a panel of names maintained by the HSCO. (9.1)
- 11.15 That, when requested by an appellant as the originator of a complaint the Director of the HSCO will present the case to the Tribunal on behalf of that appellant (institution, practitioner, or consumer). (9.1.1)
- 11.16 That appellants may, if they so desire, present the case themselves or, subject to prior approval from the Tribunal, be represented by their professional association. (9.1.1)
- 11.17 That the powers of the Tribunal include:
- the power to direct the relevant registration authority to review their findings and return a report to the Tribunal within six months of the date of direction,
  - the power to uphold the findings of the relevant registration board or council,
  - the power to uphold the appeal against those findings,
  - the power to vary the disciplinary measure or penalty imposed by the registration board or council in accordance with the findings of the Tribunal. (9.2)

11.18 That the procedural mechanism of the Health Boards Appeals Tribunal include matters outlined in items (a) to (k) in section 9.3.

11.19 That a right of appeal to the Supreme Court exist, only upon a question of law. (9.4)

(d) Arising from the Interim Report

11.20 That a record be kept on prescribed forms of complaints made by all providers of health services whether in person, by telephone, or in writing. (5.3)

11.21 That, in circumstances in which an individual is not only unable but also incapable of lodging and pursuing a complaint, the Director of the Health Services Complaints Office should have the power to decide if a complaint is to be lodged on behalf of that individual. (5.5).

11.22 That the Health Commission of Victoria transfer to the Health Services Complaints Office all records and material relevant to that Office's functions. (5.7)

11.23 That all information regarding incidents or complaints be provided to the hospital insurers at the same time as it is provided to the Health Services Complaints Office. (6.1)

11.24 That the Minister of Health set up an appropriately qualified committee to inquire into the feasibility of introducing a no-fault medical misadventure scheme. (6.2)

(e) Arising from funding recommendations

11.25 That an application fee of \$20.00 be imposed on appellants to the Tribunal, with Tribunal discretion to waive or refund such a fee. (10.1)

11.26 That the Health Commission of Victoria set up an appropriately qualified committee to determine a funding formula which takes account of both the public and private health services so that:

- . a proportion of funds for complaints administration is raised from levies on the annual registration fees of health practitioners, health institutions and agencies; and
- . the major proportion of the funds required is provided from General Revenue. (10.2)

11.27 That, following 24 months of the full operation of any new health service complaints mechanism based on the recommendations of this report, a review be conducted to adjust the health services complaints levy on the various health practitioners, health institutions and agencies, so that it accurately reflects the contribution base relative to the proportionate number of substantial complaints that come from each area. (10.3)

## 12.0 FURTHER MATTERS

12.1 The mechanism outlined in Chapters 8 and 9 does not represent a radical change to existing arrangements and procedures. However, over the first year or so of its operation the HSCO will identify quite clearly further changes which are necessary to make the system work better.

It is possible at this stage to foreshadow some of the areas where the HSCO may recommend later changes. These include:

- . the relationship of the complaints process to the common law negligence pathway;
- . the possible need for a No Fault Medical Misadventure Compensation Scheme;
- . the need to legislate for a patient's right of access to records, outside the Freedom of Information sphere;
- . the need to strengthen the powers of certain professional registration boards;
- . the need to develop improved accountability structures for certain professional registration boards;
- . the need for deliberate quality assurance arrangements in respect of patient care in order to prevent mishaps, and hence complaints; and
- . the need for a capacity to systematically review the organisational structure in which health care is provided in order to identify areas where structural reform is needed if high quality care is to be assured.

Committee Room  
20 August 1984

## Appendix I

### RECEIPT OF SUBMISSIONS

#### 1. Government Departments, Authorities, Agencies

Capital Territory Health Commission  
Chiropractors and Osteopaths Registration Board \*  
City of Colac  
City of Collingwood  
City of Croydon  
City of Springvale  
City of Waverley  
City of Warrnambool  
Department of Health - Queensland  
Director - General of Health Services Tasmania  
Health Commission of New South Wales  
Health Commission of Victoria \*  
Minister of Health Western Australia  
Ministry of Consumer Affairs \*  
Office of Minister of Health - Adelaide  
Pharmacy Board of Victoria \*  
Physiotherapists Registration Board of Victoria \*  
The Dental Board of Victoria  
The Dietitians Registration Board of Victoria \*  
The Medical Board of Victoria \*  
The Ombudsman Victoria  
Town of Kyabram  
Victorian Ethnic Affairs Commission \*

#### 2. Hospitals

Alfred Hospital  
Ballarat Base Hospital  
Bethesda Hospital  
Box Hill Hospital \*  
Seymour District Memorial Hospital  
The Geelong Hospital  
The Royal Melbourne Hospital  
The Royal Women's Hospital  
Western General Hospital

#### 3. Other Institutions, Associations and Organisations

Amalgamated Metals Foundry & Shipwrights Union  
Australasian Meat Industry Employees Union  
Australian Association of Social Workers - Victorian Branch \*  
Australian Association of Surgeons - Victorian State Committee  
Australian Council on the Ageing  
Australian Dental Association - Victorian Branch \*  
Australian Federation of Consumer Organisations Inc. \*

\* Provided verbal evidence

Australian Medical Association (Victorian Branch) \*  
 Association of Medical Superintendents of Victorian Hospitals  
 Australian Optometrical Association - Victorian Division  
 Australian Physiotherapy Association - Victorian Branch \*  
 Australian Podiatry Association (Vic).  
 Community Hospitals Association \*  
 Diamond Valley Childbirth Education Association  
 Doctors Reform Society (Victoria)  
 Health Benefits Council of Victoria \*  
 Multiple Sclerosis Society of Victoria  
 New DEAL for the Handicapped (Dignity, Education and Language) \*  
 Nursing Administrators of Geelong  
 Pharmaceutical Society of Australia (Victorian Branch) Ltd  
 Private Hospitals' Association of Victoria \*  
 Regional Accommodation Team Services \*  
 Royal Australian Nursing Federation (Victorian Branch)  
 Royal District Nursing Service \*  
 Royal Victorian Institute for the Blind  
 The Australian Chiropractors' Association - Victorian Branch \*  
 The Australian Council of Hospital Standards  
 The Australian Kidney Foundation  
 The Australian Psychological Society - Victorian Branch  
 The Rest Homes and Special Accommodation Houses Association  
 The Royal Australian College of General Practitioners  
 The Salvation Army  
 The Victorian Hospitals' Association Limited \*  
 Trade Union Migrant Workers Centre \*  
 Yooralla Society of Victoria

4. Individuals

Dr. M. Barr Fitzroy  
 Mrs. C. Chester Langwarrin  
 Mr. R.M. Ellis Ashburton  
 Ms. S. Harvey Mt Martha  
 Mr. I.G. Hughes Melbourne  
 Mr. D.F.M. Jarm Elsternwick \*  
 Mrs. E. King Wangandary  
 Mr. H. Leopold Upper Ferntree Gully  
 Mr. I. Libek Caulfield South  
 Mr. B. Markovich Fitzroy  
 Mr. & Mrs. J. Martin West Preston  
 Mr. E. Micallef, M.L.A. \*  
 Mrs. B. Milton Ringwood  
 Dr. P.J. McCleave Ascot Vale  
 Mr. K.E. McIntosh Healesville  
 Mr. E. Nimerovsky St Kilda  
 Mrs. K. Noble Kew  
 Mrs. K. Sherriff Koroit  
 Mr. P. Smith Parkdale  
 Mrs. G.E. Strachan Chelsea  
 Mr. I. Tulloch Kew  
 Ms. A. Walpole Whorouly South  
 Mr. V. Zhugailo Balaclava

5. Overseas

Canada

City of Toronto - Department of Public Health  
Department of Health Fredericton - New Brunswick  
Ministry of Health - Ontario  
Department of Health - Manitoba  
Department of Health - Province of Newfoundland  
Department of Social Services and Community Health - Alberta  
Department of Social Affairs - Government of Quebec  
Saskatchewan Health - Regina

United Kingdom

Health Service Commissioner for England, Scotland and Wales (interviewed by the Director of Research)  
Department of Health and Social Security  
East Anglian Regional Health Authority  
North East Thames Regional Health Authority  
Northern Regional Health Authority  
South East Thames Regional Health Authority  
South Western Regional Health Authority  
Trent Regional Health Authority  
Wessex Regional Health Authority

United States of America

Arkansas Department of Health  
Attorney General of Missouri  
Board of Health - State of Indiana  
Department of Attorney-General - State of Michigan  
Department of Consumer Affairs - State of California  
Department of Health and Environmental Sciences - State of Montana  
Department of Health and Mental Hygiene - State of Maryland  
Department of Health and Rehabilitative Services - State of Florida  
Department of Health and Social Services - State of Wisconsin  
Department of Health - Commonwealth of Massachusetts  
Department of Health - Commonwealth of Pennsylvania  
Department of Health - North Dakota  
Department of Health - State of Alabama  
Department of Health - State of Alaska  
Department of Health - State of Connecticut  
Department of Health - State of Delaware  
Department of Health - State of Hawaii  
Department of Health - State of Iowa  
Department of Health - State of Montana

Deaprtment of Health - State of Nebraska  
Department of Health - State of New Jersey  
Department of Health - State of New York  
Department of Health - State of Ohio  
Department of Health - State of Oklahoma  
Department of Health - State of Texas  
Department of Health - State of Utah  
Department of Health - State of West Virginia  
Department of Health - State of Wisconsin  
Department of Health Regulatory Boards - Commonwealth of Virginia  
Department of Human Resources - Health Division Oregon  
Department of Human Resources - State of Nevada  
Department of Justice - State of North Carolina  
Department of Licensing - State of Washington  
Department of Public Health - State of Illinois  
Department of Social Services - South Dakota  
Office of Health Facility Complaints - Minnesota

Other Countries

Department of Health - New Zealand

Helsedirektoratet - The Health Services of Norway

Swiss Medical Association

The National Board of Health - Finland

The Swedish Planning and Rationalisation Institute of the Health  
and Social Services.

HEALTH SERVICES COMPLAINTS

PHONE-IN \*

METHODOLOGY

The Social Development Committee (SDC) had developed a list of issues in this area on which they required further information from the public. From this list a structured questionnaire was developed in consultation with Reark Research.

The SDC felt that a good way to obtain public feedback in this area was to advertise a "Phone-In", whereby people were invited to call certain numbers at specified times on specific days and provide details of their complaint(s) against health services.

This "Health Services Complaints Phone-In" was publicised in the press and on radio in both metropolitan and rural Victoria. Members of the public were invited to call special numbers at Reark Research between 9 a.m. and 9 p.m. on April 13, 14 and 15, 1984. Seven special telephone-lines were installed at Reark Research for this purpose including two "008" lines which allowed STD calls to be made at local call costs. These lines were manned throughout that period by Reark Research telephone interviewers, some of which had foreign language skills to cater for migrants whose English was not too strong. In addition an arrangement was made with the Telephone Interpreter Service to use their assistance if a caller needed interpreter aid for a particular language that could not be spoken by any of the Reark Research interviewers.

Callers were asked to describe their complaint and those details were recorded on the questionnaire. In addition, each caller was asked a series of questions which were designed to probe further on the nature of the complaint and to assist the quantification of responses. Close study of this questionnaire indicates that it was designed to elicit the following types of information:

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\*Footnote: A report prepared for the Social Development Committee by Reark Research Pty Ltd.

- \* the type of problems encountered with health services (not their health problem itself).
- \* the type of individual or organisation against which the complaint was directed.
- \* whether a complaint had been made to the party involved and if so details about the complaint.
- \* whether migrants needed and received any interpreter assistance in this matter.
- \* level of satisfaction with result of complaint (where made).
- \* reasons for not making a complaint to the party concerned.
- \* whether complaint was taken elsewhere other than the party directly involved; if so, where and satisfaction with that course of action.
- \* reasons for not seeking legal advice.
- \* interest in a "Health Services Complaints Office".
- \* Demographics (for analysis purposes).

This "Phone-In" proved to be highly successful in attracting callers. During the three days involved, 823 interviews were conducted, with more than 250 interviews on each of the three days. The phones were ringing incessantly throughout this period which in itself is an indication of fairly prevalent public interest and concern in this area.

It is important to point out that this particular methodology is not "scientific" in terms of the results being applicable throughout Victoria, primarily because only those aware and interested called in. This means that possibly many Victorians who had a health services complaint but were unaware of the Phone-In did not participate. Nevertheless, the intention was not to be "scientific" but rather to gain an indication of the types of health services complaints which Victorians have. In this respect, as intimated earlier, the study was successful.

## SUMMARY OF PRINCIPAL FINDINGS

1. Based on the results of this study there is both a strong need and desire for a Health Services Complaints Office in Victoria.
2. A fairly wide range of complaints were aired in this phone-in, with the three most common major ones relating to:
  - \* the level of care provided by the party complained against,
  - \* the attitude or behaviour of the other party, and
  - \* the competence of the other party.
3. A clear majority of complaints were directed against individuals (primarily doctors) or institutions, such as hospitals, nursing homes or rest homes, etc.
4. Of those who called in, slightly less than half actually lodged a complaint to the other party but most of them were not really sure how to go about making a proper complaint. Furthermore, very few of these people gained any satisfaction from their complaint.
5. Many of the slight majority of callers who did not complain were deterred by lack of confidence in obtaining a satisfactory result. This "can't win" attitude was also accompanied by uncertainty as to how or who to complain to.
6. Both the previous points lend weight to the argument for a special Health Services Complaints Office as recommended by the SDC.
7. Around one third of callers actually took their complaint elsewhere with the most favoured alternative being legal practitioners, professional associations (like the AMA) and the Health Commission. However, more often than not these people were dissatisfied with the result of these actions.

The major reasons for dissatisfaction here related to:

- \* slowness
- \* lack of powers
- \* a poor or disinterested attitude

8. Altogether 11% of callers sought legal advice on the matter, with the remainder deterred against such action mainly for cost reasons or lack of confidence in obtaining a satisfactory result.
9. The impression was gained that there exists considerable scepticism in the community about the ability to really achieve anything by complaining against health services, individuals or institutions. This would partly explain why the Phone-In was so "popular".
10. As a final question, the callers were asked how interested they would be in a Health Services Complaints Office being set up to handle such complaints. There was an over-whelming interest in such an office, with over 80% claiming to be "very interested".

**TABLE 1: "Now could you tell me briefly what the complaint is about?"**

<u>TYPES OF COMPLAINTS (PROBLEMS)</u>	<u>Extent of Problem</u>		
	<u>Major</u> %	<u>Minor</u> %	<u>None</u> %
<u>PROBLEMS WITH HEALTH INSURANCE FUNDS</u>			
Excessive Fees	5	*	95
Low Insurance Refunds	3	*	97
Refusal of Refunds	2	*	98
Bad Insurance Advice	2	1	97
Other	4	1	95
 <u>OTHER TYPES OF PROBLEMS</u>			
Poor Communication by Other Party	12	1	87
Attitude or Behaviour of Other Party	25	2	74
Competence of Other Party	21	1	78
Level of Care Provided	28	2	70
Wrong Diagnosis	12	1	87
Delayed Diagnosis	7	*	93
Too Long to Obtain Reports	3	*	97
Other Party Under Influence of Drink/Drugs*		-	100
Other Party Not Fit (Physically or Mentally) 1		-	99
Overservicing	6	*	94
Other Party Acted Fraudulently or Illegally 4		*	95
Inadequate Locum Service	2	*	98
Delay in Obtaining Service	9	1	90
Other	33	2	65
	(Base)		(823)

- Notes:
1. \*= less than 0.5%
  2. Multiples allowed, so totals add to more than 100
  3. This question was asked in an open-ended way, although the above responses appeared on the questionnaire to facilitate coding. However, interviewers were instructed to probe fully to determine whether above problems occurred and if it was a major or minor problem

## 1. Types of Complaint(s) against Health Services

Table I is probably the key table to results in this study and it illustrates that:

- \* there were very few complaints against health insurance funds and where they did occur they were only minor.
- \* the most common major problems related to:
  - o the level of care provided by the party complained against
  - o the attitude or behaviour of the other party
  - o the competence of the other party
- \* two other complaints made by more than 10% of the callers were:
  - o poor communication by the other party, and
  - o wrong/delayed diagnosis which possibly related to the "competence of the other party" mentioned above
- \* it is obvious however that a fairly wide range of complaints exist which does lend weight to the argument in favour of a special Health Services Complaints Office.

**TABLE 3** "Have you (or the person you're ringing for) lodged a complaint to the person or organisation providing the service?"

IF YES:

"And was that complaint lodged in writing or over the phone or in person?"

COMPLAINT LODGED?

	<u>Total Sample</u> %
Yes	45
No	<u>55</u>
Total	<u>100</u>
 (Base)	 (823)

IF YES LODGED

In Writing	35
Over Phone	22
In Person	<u>43</u>
Total	<u>100</u>
 (Base)	 (368)

### 3. Details About the Actual Complaint

In Table 3 we can observe that:

- \* slightly less than half the callers actually lodged a complaint to the person or organisation providing the service.
- \* the most common method of lodging a complaint was "in person", whilst in one third of the cases it was made in writing.

The above result suggests that scope exists for a Health Services Complaints Office, since a significant proportion of people obviously felt that complaining to the person/organisation concerned would not be fruitful. The following pages provide further results relevant to this issue.

TABLE 4 IF COMPLAINT LODGED...

"Did the person or organisation concerned explain how to go about making a complaint?"

IF NO:

"Did you (or the person you are ringing for) understand how to go about making a complaint?"

AWARENESS OF HOW TO COMPLAIN

	<u>Total Sample</u>
	%
Yes	17
No	82
Don't Know	<u>1</u>
Total	<u>100</u>
(Base)	(368)

IF NO

Yes	40
No	58
Don't Know	<u>2</u>
Total	<u>100</u>
(Base)	(306)

TABLE 5 " Were you (or the other person you are ringing for) interviewed personally by the person or organisation concerned?"

DID COMPLAINT INVOLVE A PERSONAL INTERVIEW WITH PARTY CONCERNED?

	<u>Total Sample</u>
	%
Yes	36
No	60
Don't Know	<u>4</u>
Total	<u>100</u>
(Base)	(368)

Note: Only asked of those who lodged a complaint.

#### 4. Awareness of How to Formally Complain About the Problem

Table 4 illustrates that:

- \* the majority of callers who actually made a complaint were not sure how to go about making a formal complaint about their particular problem and only in few cases were they given advice on how to do so by the person/organisation concerned.

In Table 5 we find that:

- \* just over one third of those who made a complaint were interviewed personally by the other party concerned.

These two results also add weight to the argument for a special complaints office such as the one proposed by the SDC.

**TABLE 6** "In overall terms were you (or person you're ringing for) fully satisfied or partly satisfied or dissatisfied with the result of your (their) complaint?"

OVERALL SATISFACTION WITH RESULT OF COMPLAINT

	<u>Total Sample</u> %
Fully Satisfied	5
Partly Satisfied	7
Dissatisfied	81
Don't Know	7
Total	<u>100</u>
(Base)	<u>(368)</u>

Note: Only asked of those lodging a complaint.

5. Satisfaction with Result of Complaint Made

Table 6 indicates that:

- \* only a small minority of those making a complaint were satisfied with the result of their complaint, the clear majority expressing dissatisfaction.

Thus, we have found that nearly half the sample failed to complain presumably because of lack of confidence in achieving a worthwhile result (more on this in the next section), whilst those that did complain were mostly disappointed anyway.

TABLE 7 IF COMPLAINT NOT LODGED...

"What reasons in particular did you (or the persons you're ringing for) have for not taking this complaint to the person or organisation providing the service?"

	<u>Total Sample</u> %
Too frightened	11
Couldn't be bothered	6
Didn't expect to get anywhere by complaining	40
Won't criticize or do in other professionals	4
Won't criticize employer	2
Other	41
(Base)	(455)

Note: Only asked if complaint had not been lodged.  
Multiples allowed.

## 6. Reasons For Not Lodging a Complaint

In the previous section we suggested that the many people who failed to lodge a complaint were probably deterred by a lack of confidence in obtaining a satisfactory result. Table 7 sheds further light on this and illustrates that:

- \* the major reason for not complaining was that people didn't expect to get anywhere by complaining. We could also include "too frightened" here.
  
- \* a hand analysis of the "other" responses also reveals the following key reasons:
  - o didn't know how to/no one to complain to
  
  - o didn't think it would be worthwhile (which fits into the first reason mentioned above)

and to a minor degree:

- o an unwillingness to cause trouble, and
  
- o being too upset or too old or too ill to do so.

- : other reasons mentioned, albeit to a very small degree, included:
  - o inability to speak English
  - o lack of time
  - o still having treatment and will wait until after that treatment ends.

**TABLE 8** "Have you (or the person you're calling for) taken this complaint to any other body or authority?"

IF YES:

"What other body or authority was that?"

"And were you satisfied or dissatisfied with the way your complaint was handled by...?"

COMPLAINT TAKEN ELSEWHERE?

	<u>Total Sample</u>
	%
Yes	30
No/Don't know	70
Total	<u>100</u>
	—
(Base)	(823)

<u>IF YES, WHERE...</u>	<u>Total Sample</u>	<u>Satis-</u>	<u>Dissat-</u>	<u>Don't</u>	<u>(Base)</u>
	<u>%</u>	<u>fied</u>	<u>isfied</u>	<u>Know</u>	
		<u>%</u>	<u>%</u>	<u>%</u>	
Ombudsman	7	17	78	6	(18)
Ministry of Consumer Affairs *	*	-	100	-	(1)
Health Commission	23	27	71	2	(56)
Registration Board	2	25	75	-	(4)
Professional Assoc- iation	19	15	79	6	(48)
Voluntary Assoc- iation	2	50	33	17	(6)
Lawyers/Solicitors/ Legal Aid	36	40	53	7	(88)
Other	26	46	54	-	(63)
(Base)					(247)

\* Multiples allowed

## 7. Was Complaint Taken Elsewhere?

Table 8 shows that:

- \* nearly one third of the callers did take their complaint elsewhere.
- \* the most common alternatives in this respect were:
  - o legal practitioners
  - o the professional association concerned, e.g. AMA, and
  - o the Health Commission

However, in each case there were strong levels of dissatisfaction with the way these parties handled the complaint.

**TABLE 9** IF DISSATISFIED IN PREVIOUS QUESTION ... "Why were you dissatisfied with....?"

	Body/Authority					Other (Avge) Body
	Ombuds man	Health Comm/ Dept.	Prof. Assoc.	Lawyer/ Solictr/ L.Aid		
	%	%	%	%	%	%
Slow	27	37	22	28	23	(27)
Expensive	-	5	7	15	4	(6)
Intimidating	7	7	10	17	6	(9)
Biased/Not Objective	7	10	15	9	13	(11)
Lacked Powers	20	24	20	19	21	(21)
Lacked Expertise	7	7	-	11	4	(6)
Lacked Independence	-	-	2	11	6	(4)
Lacked Personal Representation	-	-	7	-	6	(2)
Lacked Resources	-	-	5	4	8	(3)
Not thorough	7	12	2	11	13	(9)
Other	47	29	39	23	38	(35)
(Base)	(15)	(41)	(41)	(53)	(48)	(198
						Total)

8. Reasons for Dissatisfaction with Alternative Party to Whom Complaint was Taken

From Table 9 we can observe that:

- \* apart from "other" the most common causes of dissatisfaction with the alternative party were:
  - o too slow, and
  - o lack of powers
  
- \* a hand analysis of "other" determined that the following were also causes of dissatisfaction:
  - o inability to do anything - this relates to a "lack of powers" above.
  - o a poor or negative attitude or even just a lack of interest in the complaint.
  - o "passing the buck".

**TABLE 10** "I noticed that this complaint was taken to a lawyer. When you (or the person you're calling for) did that were you advised to take legal action or do nothing or were you given some other advice?"

<u>ADVICE GIVEN BY LAWYER</u>	<u>Total Sample</u> %
<u>Advised to...</u>	
Take Legal Action	35
Do Nothing	29
Other	36
Total	<u>100</u>
	—
(Base)	(88)

Note: Asked only of those who lodged a complaint and who sought legal advice re this complaint.

**TABLE 11** "What reasons, if any, do you (or the person you're calling for) have for not taking legal advice on this matter?"

<u>REASONS FOR NOT SEEKING LEGAL ADVICE</u>	<u>Total Sample</u> %
Costs too much	21
Didn't think it would be worthwhile	26
Didn't want to go that far	8
Didn't want to go to court	4
Other	55
(Base)	(159)

Note: Asked only of those who lodged a complaint but did not seek legal advice about it.

9. Advice Given by Legal Practitioners and Reasons for Not Seeking Legal Advice

From Table 10 we can see that:

- \* amongst the 11% or so who sought legal advice only about one third were advised to take legal action with a similar proportion advised to do nothing.
- \* the remainder were advised to either wait or follow it up themselves via letters to other bodies such as the Dental Board or Health Commission (based on hand analysis of "other").

Table 11 illustrates that:

- \* the major reasons mitigating against the seeking of legal advice were:
  - o costs, and
  - o lack of confidence of a likely satisfactory result

(a hand analysis of "other" tends to confirm the above reasons as the most common).

**TABLE 12** "And would you be interested or disinterested in seeing a HEALTH SERVICES COMPLAINTS OFFICE set up to deal with complaints such as the one you've rung up about?"

PROBE: "and is that very or fairly interested/  
disinterested?"

INTEREST IN HEALTH SERVICES COMPLAINTS OFFICE BEING SET UP

	<u>Total Sample</u> %
Very Interested	81
Fairly Interested	10
Neither Interested nor Disinterested	5
Fairly Disinterested	2
Very Disinterested	1
Don't Know	1
Total	<u>100</u>
(Base)	<u>—</u> (823)

10. Interest in the Setting Up of a Health  
Complaints Office

Table 14 indicates overwhelming support for such a Health Services Complaints Office amongst those who called the Phone-In. Over 90% indicated at least some degree of interest here, with the vast majority of those displaying high interest.

### Appendix 3

## STATEMENT BY THE PUBLIC TRUSTEE ON MATTERS RELATED TO HIS OFFICE CONTAINED IN THE INTERIM REPORT UPON COMPLAINTS PROCEDURES AGAINST HEALTH SERVICES

### 1. At Page 29 of Interim Report:

The Public Trustee advised that his solicitor obtained a report from a leading urologist with forensic experience. After examination of the hospital reports the specialist indicated his positive opinion that there was no evidence of negligence by the Hospitals or the doctors, upon which an action for damages could be based. In view of that opinion, the Public Trustee did not institute legal action in this case.

### 2. At Page 43 of Interim Report:

The Public Trustee has commented on questions (i) (ii) and (iv) above which relate to his administration:-

- (i) The Proprietor, in fact, was charged with theft, but a nolle prosequi was entered by the Director of Public Prosecutions. This meant that the case was not brought to trial.
- (ii) It would appear to be unjust for a licence to be withdrawn before a conviction was entered.
- (iv) Upon her discharge from hospital, the lady was presumed by law to be capable of handling her own affairs. The Public Trustee had no right to take the actions suggested.

The moneys were eventually recovered from the Proprietor as a result of a civil action instituted by the Public Trustee, after the lady's affairs came under his administration again.



**SOCIAL DEVELOPMENT COMMITTEE**

**REPORT UPON**

**INQUIRY INTO RADIATION APPARATUS**

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**Ordered to be printed**

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**D - No. 43/1982-84**



Terms of Reference for the Inquiry into  
Radiation Apparatus

"That there be referred to the Social Development Committee for inquiry consideration and report the question of whether there is need and justification for the law to provide for the control of the provision of radiation apparatus to be used for the diagnosis or therapy of human beings where it is considered that such provision could result in a more than adequate or inappropriate diagnostic or therapeutic facility becoming available, having regard to the place where it is proposed and, if so, how appropriate existing legislation is, whether additional legislative powers would be required, and what are the criteria according to which such provisions would be administered." (Minutes of the Proceedings, Legislative Council, pp. 245 and 249, 1983).

EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

---

Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

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Tuesday, 31 May 1983

24. SOCIAL DEVELOPMENT COMMITTEE - The Honourable Evan Walker moved, by leave, That the Honourable K.I.M. Wright be discharged from attendance upon the Social Development Committee.

Question - put and resolved in the affirmative.

Ordered - That a message be sent to the Assembly acquainting them of the foregoing resolution and that a vacancy accordingly exists in the membership of that Committee.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

---

Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave and question - That, contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

---

Wednesday, 1 June 1983

23. MESSAGE FROM THE LEGISLATIVE COUNCIL acquainting the Assembly that they have agreed to a resolution discharging the Honourable K.I.M. Wright from attendance upon the Social Development Committee and notifying that a vacancy accordingly exists in the membership of that Committee.
25. SOCIAL DEVELOPMENT COMMITTEE - Motion made, by leave and question - That Mr. Steggall be appointed a member of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

## Chairman's Introduction

In this Report the Committee has provided its assessment of:-

- (a) the need and justification for the law to provide for the control of the provision of radiation apparatus.
- (b) the planning needs for the provision of such diagnostic or therapeutic facilities.
- (c) the location of such facilities.
- (d) the appropriateness or otherwise of existing legislation, the necessity for any further legislative needs and the criteria governing the provision of such radiation apparatus.

In the course of its inquiry the Committee has investigated the following matters in relation to radiation apparatus in this State:

- planning and rationalization;
- the setting of standards for operators and usage;
- safety;
- the need for further legislative requirements; and
- medico-legal aspects.

On the basis of the information collected and the conclusions drawn from public hearings, the Committee has concluded that the Health Commission of Victoria is the most appropriate body to register radiation equipment and license radiation apparatus operators as well as be responsible for the following matters concerning radiation apparatus:

- the development of safety standards;
- the planning of future needs;
- the rationalization of existing facilities;
- the development of standards for operators and usage;

- the development of guidelines and codes of practice; and
- the review and adjustment of radiation legislation, in particular the Regulations under the Health (Radiation Safety) Act 1983.

The Committee expresses its thanks to the many individuals and organizations who made submissions either in writing or in person before the Committee.

As Chairman, I would like to record my personal thanks to the Sub-Committee, and in particular to the Chairperson, the Hon. C. J. Hogg and the Hon. W. Jona for their dedication, as well as the assistance received from the Committee's staff.

G. K. Ernst, M.P.  
Chairman

Social Development Committee Members

- \* Hon. H.G. Baylor, M.L.C.  
Hon. J.L. Dixon, M.L.C.  
Mr. G.K. Ernst, M.P. (Chairman)
- \*\* Hon. C.J. Hogg, M.L.C.
- \* Hon. W. Jona, M.P. (Deputy Chairman)  
Hon. J.E. Kirner, M.L.C.
- \* Mr. D.R. Newton, M.P.
- \* Mr. D.N. Saltmarsh, M.P.
- \* Mr. H.K. Shell, M.P.
- \* Mr. B. Steggall, M.P.  
Mr. T.M. Wallace, M.P.
- \* Mr. M.T. Williams, M.P.

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Footnote: \* Members of the Sub-Committee inquiring into radiation apparatus  
\*\* Chairperson of the Sub-Committee inquiring into radiation apparatus

## GLOSSARY

"Ionizing radiation" means electromagnetic or particulate radiation capable of producing ions directly or indirectly in passage through matter but does not include electromagnetic radiation of a wavelength greater than 100 nanometres;

"Ionizing radiation apparatus" means apparatus capable of producing ionizing radiation when electrically energized and sealed source apparatus;

"Non-ionizing radiation" means electromagnetic radiation of a wavelength greater than 100 nanometres and sonic infrasonic or ultra sonic waves;

"Non-ionizing radiation apparatus" means apparatus capable of producing non-ionizing radiation but not ionizing radiation exceeding a prescribed amount;

"Radiation apparatus" means any ionizing or non-ionizing radiation apparatus;

"Sealed source apparatus" means any gauge, instrument, equipment or other device in which is incorporated a sealed radio-active source but does not include a container used solely for storage or transport purposes;

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

1.1.1 Following the Final Report of the Consultative Council on Radiation Safety in April, 1982 the Health (Radiation Safety) Bill was drawn up and subsequently enacted.

1.1.2 When this Bill was considered by Parliament, concern was expressed over a clause which refers to control of the provision of radiation apparatus. The Health (Radiation Safety) Act 1983, inserted new section 108 AE (5)(c) in the Health Act 1958. This section states:-

"The Commission shall not register any radiation apparatus or sealed radio-active source to be used for the diagnosis or therapy of human beings if it considers that the registration - in the case of radiation apparatus or a radio-active substance including nuclear medicine or radiological equipment which is ancillary to the apparatus or radio-active substance which the Commission is satisfied has a market value at the time of the application for registration exceeding \$80,000 or such other high prescribed amount, would result in more than adequate diagnostic or therapeutic facilities of the type proposed to be registered becoming available having regard to the place where it is proposed to be used."

1.1.3 Subsequently both Houses of Parliament passed the following resolution:-

"That there be referred to the Social Development Committee for inquiry consideration and report the question of whether there is need and justification for the law to provide for the control of the provision of radiation apparatus to be used for the diagnosis or therapy of human beings where it is considered that such provision could result in a more than adequate or inappropriate diagnostic or therapeutic facility becoming available, having regard to the place where it is proposed and, if so, how appropriate existing legislation is, whether additional legislative powers would be required, and what are the criteria according to which such provisions would be administered."1

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1. Minutes of the Proceedings, Legislative Council, pp. 245 and 249, 1983

## 1.2 Radiation Apparatus and Certificate of Need

1.2.1 Following the receipt of this reference, the Governor-in-Council made an additional reference to the Committee "to determine the desirability or otherwise of introducing Certificate of Need Legislation that would enable the Health Commission of Victoria to regulate the provision of capital, facilities and equipment for use in diagnosis or treatment for medical purposes". \*

1.2.2 The Committee considered that there was considerable overlap between these two inquiries and that there were areas of similarity, for example:

- . both are concerned with the Health Care area;
- . both involve aspects of planning and rationalization;
- . both include legislation reviews intended to restrict capital equipment to reduce costs;
- . both include quality of care and safety matters in the health care area; and
- . both are concerned with cost control.

1.2.3 The Committee considered that the Certificate of Need Legislation Inquiry clearly implied an overall responsibility for equipment and facilities in the Health Care field - including the equipment considered specifically in the Radiation Apparatus Inquiry. The Committee therefore decided to treat the two references as aspects of the same general inquiry, while tabling separate reports as required.

## 1.3 The Control of Radiation Apparatus Through Certificate of Need

1.3.1 A major aspect of the Health (Radiation Safety) Act 1983 is the control of the location of radiation apparatus in this State. This is achieved through the insertion of section 108 AE (5)(c) in the Health Act 1958, (See 1.1.2).

1.3.2 It was put to the Committee in public hearings and in many submissions that the section in question can be construed as a type of "Certificate of Need"

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Footnote: \* See Appendix I for the full terms of reference of this Inquiry

(C.O.N.) legislation. Without prejudicing the findings of the Committee in its report on C.O.N., C.O.N. may be described as legislation which requires any individual organisation considering a purchase, or an additional service or a new service in the health care area, to apply for a certificate of approval from the appropriate health authority.

1.3.3 The Committee considers that the following aspects of section 108 AE (5)(c) of section 5 of the Act require clarification, as to

(a) whether the \$80,000 limit refers to a total installation cost or the cost of component parts; and

(b) the meaning of the term "market value".

1.3.4 The Committee believes that the entire section should be considered under the Certificate of Need reference and therefore the aforementioned issues have been referred to that inquiry for examination and report.

## CHAPTER 2

### METHODOLOGY

#### 2.1 Public Submissions

2.1.1 The Committee invited the public to make submissions to this inquiry and a total of thirty-three submissions were received from private individuals, medical/professional associations, hospitals, universities and interstate health departments.

2.1.2 Views contained in the submissions have included:

- opposition to any discretionary powers being given to the Health Commission to control the right of private health professionals to determine exclusively where such radiation apparatus should be installed and how it should be used for the diagnosis or therapy of human beings;
- that section 108AE (5)(c) should be considered as Certificate of Need legislation;
- that, since radiology is a referred medical speciality, control over provision and/or use by such medical specialists is unnecessary;
- that some issues in the area of radiation apparatus need further examination, these include:-
  - the need to prevent over-concentration of equipment in one area;
  - the need to prevent inappropriate equipment being used;
  - the safety of apparatus in use; and
  - the qualification of people using the apparatus.

- that there is unnecessary duplication of X-Ray procedures made by parties involved in legal actions, or in cases where the diagnosis based upon the previous X-Ray procedure is being questioned; and
- that, as some submissions advocated, there is a definite need for control and legislation to prevent the possibility of over-exposure or unnecessary radiation.

2.1.3 The submissions received from the Health Authorities of other States concentrated largely on the respective local legislation on radioactive devices and contained technical data and regulations.

## 2.2 Structure of the inquiry

2.2.2 Consultants were invited to make submissions to assist the Committee in its inquiry on the following matters:-

- (a) the need and justification for the law to provide for the control of the provision of radiation apparatus;
- (b) the planning needs for the provision of such diagnostic or therapeutic facilities;
- (c) the location of such facilities; and
- (d) the appropriateness or otherwise of existing legislation, any further legislative needs and the necessary criteria governing the provision of such radiation apparatus.

2.2.3 The Committee commissioned Nicholas Clark and Associates to assist with this inquiry and, following discussion, extended the terms of reference to the consultants to include:-

- (a) identification of the key cost areas and major equipment use in patient diagnosis in the area of health care with an emphasis on the following areas:
  - Community Health
  - Hospitals and Institutions

- . Dental Clinics
  - . General Practitioner Practice
  - . Physical Fitness Studios.
- (b) Identification of the criteria and mechanisms for equipment purchases and the provision of new facilities in the private sector of the health services area.

The information presented by the consultant has been of assistance both in the Radiation Apparatus Inquiry and in the Committee's inquiry into the desirability or otherwise of introducing Certificate of Need legislation.

## CHAPTER 3

### THE HEALTH RADIATION ADVISORY COMMITTEE

#### 3.1 Background

3.1.1 Section 6 of the Health (Radiation Safety) Act 1983 inserted a new section 108 AK in the Health Act 1958 which provides that there shall be a Radiation Advisory Committee appointed by the Minister of not less than five persons which shall advise the Minister or the Commission on various matters including the following:-

- (a) the promotion of radiation safety procedures and practices;
- (b) recommending the criteria for the licensing of persons and the qualifications, training or experience required for licensing;
- (c) recommending the criteria for the registration of radiation apparatus and sealed radio-active sources;
- (d) recommending the nature, extent and frequency of periodic safety assessment of radiation apparatus and sealed radio-active sources registered;
- (e) codes of practice with respect to particular radio-active substances and uses of ionizing and non-ionizing radiations; and
- (f) any matter which the Minister agrees the Committee should consider and report on. <sup>2</sup>

3.1.2 The Committee has been advised that the Radiation Advisory Committee has commenced its meetings and consists of the following persons:-

- . Prof. W.S.C. Hare, Chairman,  
Royal Melbourne Hospital.

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2. Health (Radiation Safety) Act 1983 No. 9889 Section 6.

- . Dr. T.F. Sandeman,  
Peter MacCallum Hospital.
- . Dr. J.T. Andrews,  
Royal Melbourne Hospital.
- . Dr. J. M. Camakaris,  
University of Melbourne.
- . Mr. D.W. Keam,  
Australian Radiation Laboratory.
- . Dr. J.A. Mathews,  
A.C.T.U./Victorian Trades Hall Council.
- . Mr.F.P.J. Robotham,  
University of Melbourne.
- . Dr. G.J. Rouch,  
Health Commission of Victoria.

### 3.2 Radiation Advisory Committee (R.A.C.)

3.2.1 The Committee believes that the major priorities of the R.A.C include:-

- (a) the education of the public and the health professions to make them aware of good radiological practice;
- (b) the development of methods of inspection of radiation apparatus to ensure standards are maintained in equipment, use and operation; and
- (c) the preparation of a policy statement on radiation use for Victoria.

3.2.2 It is envisaged that the R.A.C. will have referred to it any matter concerned with the safety of radiation apparatus and its installation and that a necessary part of the functions of the R.A.C. will be to continue to review and adjust the Regulations. <sup>3</sup>

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3. The Health (Radiation Safety) Act 1983, No. 1889.  
The Health (Radiation Safety) Regulations 1984.

3.2.3 The Committee has been informed that the R.A.C. is considering its future priorities and functions. It is recommended that these functions include:-

- (a) the review of the current methods of registration of equipment and licensing of operators;
- (b) the investigation of radiation apparatus equipment in order to make recommendations on the type of equipment needed or desirable for specific areas of the health professions, and the setting of appropriate levels of sophistication of equipment for certain fields such as dentistry and general medical practice;
- (c) the development and setting of standards for operators of equipment, including the development of codes of practice for the use of radiation apparatus in diagnosis and therapy;
- (d) the preparation of regulations for the use of ultrasound equipment;
- (e) the development of registration facilities and controls over solariums with non-ionizing radiation equipment;
- (f) the development of research into radiation apparatus, and policies concerning types of equipment and location; and
- (g) the development of guidelines in relation to the number and type of machines, and their geographic placement.

3.2.4 The functions of the R.A.C. appear to overlap some of the Committee's terms of reference, in particular:-

- . the location of such facilities;
- . the appropriateness of existing legislation and any further legislative needs governing the provision of radiation apparatus; and
- . matters of safety.

### 3.3 Radiation Apparatus Planning and Rationalization

- 3.3.1 In relation to this aspect of the inquiry, the Committee considers that a "data bank" of information concerning radiation apparatus must be established to enable planners and service providers to have ready access to relevant information. Such planners would be principally located in the Planning and Hospitals Divisions of the Health Commission, assisted by the R.A.C. and other consultants and experts.
- 3.3.2 The Committee considers that when the R.A.C. develops its standards for equipment requirements and their geographic placement the methodology employed must be circulated amongst interested individuals and organizations, to facilitate purchasing decisions and a broader understanding of policy. The Committee is of the opinion that it is important to have agreement and participation in the methodology for developing standards to assist equipment planning and rationalization.

## CHAPTER 4

### THE NEED TO LEGISLATE

#### 4.1 Introduction

4.1.1. One of the main aspects of the terms of reference is "whether there is need and justification for the law to provide for the control of the provision of radiation apparatus".

#### 4.2 The Need to Legislate

4.2.1 Prior to the Health (Radiation Safety) Act 1983, legislative provision was made under the Dangerous Trades Part of the Health Act 1958. This legislation was orientated towards the protection of radiation workers and did not directly concern itself with minimizing the dose of radiation received by patients during radiological procedures.

4.2.2. After reviewing the evidence, the Committee is of the opinion that doses received by patients during radiological procedures make by far the biggest contribution to the population dose from man-made sources of radiation. It is understood that an international body such as the International Commission on Radiological Protection now accepts that low doses of radiation may carry risks of carcinogenic and mutagenic effects. Consequently, there is a move by authorities to legislate in this area.

4.2.3 The Health (Radiation Safety) Act 1983 followed closely the recommendations made by the Consultative Council on Radiation Safety. This Council was established by the previous Government and its first series of reports were handed down when The Hon. W.A. Borthwick was Minister of Health. The final report was made in April 1982 to the current Minister of Health.

4.2.4 For the first time the Act contained powers to regulate and control non-ionizing radiation. In addition, it allowed for future controls, such as for ultraviolet radiation, lasers, radio frequency and a range of other non-ionizing radiation.

- 4.2.5 The Committee is of the opinion that the major interest is and will remain in the field of ionizing radiation. This includes those most damaging forms of radiation that have implications not only for the individual patient but also for all those whose work involves the use of radiation equipment, and also for the public as a whole.
- 4.2.6 The Act for the first time enables certain powers over the sale and distribution of ionizing and other radiation apparatus. Previous legislation only provided such powers for radio-active substances and not for radiation apparatus.
- 4.2.7 Patient dosage and the safety of the radiation apparatus operator traditionally have been left to the relevant professions. However, given an increase in general background radiation, the risk to the public due to medical diagnostic area of radiation is most significant. The Committee considers therefore that because of the increase in the general level of radiation, controls on the use of diagnostic and therapeutic radiological equipment are needed to protect both the community and the individual patient.

## CHAPTER 5

### CONSUMER PROTECTION

#### 5.1 Introduction

- 5.1.1. Evidence has been presented to the Committee indicating that there are inappropriate radiological tests and processes being carried out, and that there is insufficient communication between various practitioners in the medical field about exposures to X-Rays. Radiation dose accumulation therefore appears to be a very real problem.

#### 5.2. Patient dose

- 5.2.1 The Committee notes that no monitoring of patient dosage in relation to radiation exists at the moment and that the Health (Radiation Safety) Act 1983 does not cover this aspect. Furthermore, there are no individual records that follow a person's history of exposures to X-Rays and radiation.
- 5.2.2 The current practice for radiation workers is that they wear a film badge which is exposed during any X-Ray work with the films developed monthly. However, the Committee does not believe that such a system of film badges is practical and warranted for every member of the public due to the costs involved. The following alternatives should be considered:
- . In relation to long term patients in hospitals, the Committee considers it should be possible for the hospitals to monitor radiation dosage of patients by computer; and
  - . In relation to the majority of the public, the Committee suggests that a card be issued to be filled in by the licensed operator of a radiation apparatus, and carried by the patient to every diagnosis where radiation apparatus is being used. The use of educational and public awareness programs should be developed to promote this scheme.

5.2.3 It is considered that the following information on patient dosage should be recorded either by computer or on the individual card:

- . date of diagnosis;
- . type of diagnosis and brief description of equipment;
- . estimated exposure;
- . clinic where diagnosis is taken; and
- . licensed operator's name.

This issue is one that the R.A.C. should examine.

### 5.3 Workers' compensation and personal injuries litigation

5.3.1 It was brought to the Committee's notice that over-servicing and duplication of diagnostic services involving imaging techniques occurs and constitutes a medico/legal problem.<sup>4</sup> Commonly, in workers' compensation and car accident cases parties involved require separate X-Rays and diagnosis and rarely share the facility. As litigation has traditionally been conducted in an adversarial manner only infrequently is there an exchange of medical reports and sharing of diagnostic services.

5.3.2 The Law Institute has addressed this problem, stating:

" ... that, in the interests of patients and in order to avoid duplication, it is desirable that certain specialized examinations, such as X-Ray, pathology, E.C.G., E.E.G. and other special diagnostic investigation, should only be undergone by patients insofar as it is necessary for their treatment and, subject to the consent of the patient, the relevant reports should be made available to the defendants medical advisers."<sup>5</sup>

5.3.3 The Committee commends the work of the Medico/Legal Joint Standing Committee in its concern to ensure that persons are not subjected to unnecessary exposure to radiation by duplication or the over-use of imaging techniques in diagnoses for medical and legal purposes.

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4. Minutes of Evidence - 3 & 6 August 1984, pp. 19, 79-87  
5. Minutes of Evidence - 6 August 1984, p. 81

- 5.3.4 The Committee recommends that for medical-legal purposes more use should be made of copying techniques where possible and practicable, and that consultation with the client/patient occurs during these cases of litigation to ensure that persons are not subjected to unnecessary exposure to radiation.
- 5.3.5 The Committee considers that the legal and medical professions should jointly prepare codes of practice for medico-legal purposes.

## CHAPTER 6

### IMAGING TECHNIQUES AND LEGAL ACTION

#### 6.1 Introduction

6.1.1 It was put to the Committee during its investigations that some hospitals and medical practitioners include the use of imaging techniques, such as X-Rays, as standard diagnosis procedures, and that this process results in an over-use of such imaging techniques, and that possible savings and other benefits could result if this situation was corrected.

#### 6.2 Public Hearings

6.2.1 The Committee considered that this area of the reference needed further investigation and public hearings were held on 3 and 6 August, 1984.

6.2.2 Views arising from the public hearings included:-

- . that in relation to X-Rays, over-servicing occurs in hospitals;
- . that one reason for this over-servicing in hospitals is the pattern of decision making. In teaching hospitals especially, junior staff are responsible for initial work on patients and may not be sufficiently confident or experienced to discount certain medical investigations;
- . that this type of over-servicing is a feature of the teaching environment and may be unavoidable since giving people some degree of responsibility is an essential part of their learning to practice;
- . that more responsibility and accountability however, should be placed upon clinicians, especially senior clinicians, to ensure that effective use is made of the financial resources by junior staff;
- . that people who are trained in an environment of over-using procedures sometimes carry that over-use of procedures into the private sector;

- that hospitals and radiologists could be taken to court if they failed to use a particular imaging technique especially if they failed to detect a condition. As a result the fear of litigation would induce some doctors to overservice a patient;
- that radiologists and pathologists could monitor the ordering pattern profile of doctors to reduce over-servicing or prevent unnecessary procedures being undertaken;
- that a peer review process allows a definition of what is reasonable or acceptable behaviour for the use of imaging techniques;
- that litigation involving the medical profession is on the increase and increasingly exercises the minds of the medical profession;
- that the practice of medicine is becoming defensive; and
- that if registration and licensing provisions make it illegal for particular practitioners to render certain radiological services to patients then they can discharge their duty by referring a further referral.

6.2.3 The Committee is concerned at the prospect of an increase in "defensive" medicine, where radiological tests are performed solely to guard against the possibility of future litigation by patients. It recommends that changes in the pattern of medical litigation and defensive medicine should be monitored.

## CHAPTER 7

### RECOMMENDATIONS

The Committee recommends as follows:-

- 7.1 That the Radiation Advisory Committee of the Health Commission of Victoria maintain an on-going review of:-
- (a) the location of radiological apparatus;
  - (b) the appropriateness of existing legislation and any further legislative needs governing the provision of radiation apparatus;
  - (c) any matter of safety affecting such apparatus;
  - (d) the development of policies on radiation apparatus for this State; and
  - (e) research needs and the development of equipment. (3.2) \*
- 7.2 That a "data bank" of information concerning radiation apparatus be established by the Health Commission to enable health planners and service providers to obtain ready access to relevant information in order to promote effective utilization of such apparatus.(3.3.1)
- 7.3 That standards and criteria for equipment requirements in this State be established by the Radiation Advisory Committee, and that the methodology for developing standards and criteria be circulated and agreed to by interested individuals and organizations. (3.3.2)
- 7.4 That the Radiation Advisory Committee monitor and review the dose level to which a patient is exposed and report to the Health Commission on any necessary changes to the Health (Radiation Safety) Act 1983 and supporting Regulations in the area of patient dosage. (4.2.7)

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Footnote: \* Numbers in parentheses refer to the preceding chapter or section

- 7.5 That a card record be maintained on an individual patient basis at every diagnosis where radiation apparatus is used. The use of such cards should be part of a continuing public awareness campaign to keep people informed about dangers that can emanate from excessive radiation dosage. (5.2.2)
- 7.6 That radiation dosage of long-term hospital patients and long-term outpatients be monitored by computers in hospitals. (5.2.2)
- 7.7 That the design and implementation of the above recommendations in paragraphs 7.5 and 7.6 be the responsibility of the Radiation Advisory Committee of the Health Commission of Victoria. (5.2.3)
- 7.8 That more communication between solicitors is necessary in advising interested parties of the diagnostic techniques used and in sharing the films of X-Rays already taken in medico/legal cases such as workers compensation and car accident cases. (5.3)
- 7.9 That there should be more use of copying techniques and sharing of diagnoses, reports and documents to reduce the radiation dosage for members of the public involved with medico/legal problems. (5.3.4)
- 7.10 That the medical and legal professions prepare codes of practice in their respective areas advocating more communication and sharing of diagnostic techniques and findings. (5.3.5)
- 7.11 That the proposed Health Services Complaints Office monitor any change in the pattern of medical litigation and defensive medicine to be included in its annual report. (6.2.3)

Recommendations concerning the provision and control of radiation apparatus in respect of section 108 AE(5)(c) of the Health Act 1958 will be made in the Committee's report on Certificate of Need Legislation.

Committee Room.  
12 September 1984

## APPENDIX 1

### PARLIAMENTARY COMMITTEES ACT 1968

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*At the Executive Council Chamber, Melbourne, the  
eleventh day of October 1983*

Present:

His Excellency the Governor of Victoria

Mr Jolly

Mr Wilkes  
Mr Kennan

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### REFERRAL OF MATTERS TO THE SOCIAL DEVELOPMENT COMMITTEE

Whereas the *Parliamentary Committees Act 1968* as amended by the *Parliamentary Committees (Joint Investigatory Committees) Act 1982* provides, among other things, for the establishment of a Joint Investigatory Committee of the Legislative Council of Victoria and the Legislative Assembly of Victoria to be called the Social Development Committee.

And whereas paragraph (a) of section 4F(1) of the said Act provides, in part, that a Joint Investigatory Committee is required to inquire into, consider and report to the Parliament on any proposal, matter or thing relevant to the functions of the Committee which is referred to the Committee by Order of the Governor in Council published in the *Government Gazette*.

And whereas section 4F(3) of the said Act provides, in part, that an Order of the Governor in Council referring a proposal, matter or thing to a Joint Investigatory Committee pursuant to paragraph (a) of sub-section (1) may specify a period of time within which the Committee is required to make a final report to the Parliament on the proposal, matter or thing.

Now therefore, I, His Excellency the Governor of the State of Victoria, in the Commonwealth of Australia, by and with the advice of the Executive Council of the said State doth by this Order require the said Social Development Committee to inquire into, consider and report to the Parliament on the following proposals, matters or things, that is to say:

To receive submissions and evidence with regard to matters referred to in the following terms of reference and to report and make recommendation with regard to these matters in order to determine the desirability or otherwise of introducing Certificate of Need Legislation that would enable the Health Commission of Victoria to regulate the provision of capital, facilities and equipment for use in diagnosis or treatment for medical purposes.

Without limiting the scope of the enquiry the Committee is required to report on:

1. The objectives to which Certificate of Need Legislation is addressed (including consideration of objectives concerning maintenance of cost control, quality of care and ensuring balanced planning of health services).

2. Overseas or interstate experience with Certificate of Need Legislation.
3. Alternative mechanisms for achieving the objectives of Certificate of Need Legislation including the possibility of joint Commonwealth-State action.
4. Whether or not Certificate of Need Legislation should apply to all types of capital equipment or only prescribed classes or types of equipment.
5. Whether or not Certificate of Need Legislation should be limited to equipment with a capital cost of more than a set dollar amount.
6. Whether or not Certificate of Need Legislation should apply to both hospital and non-hospital facilities.
7. The structures and mechanisms to be used in developing criteria and standards for identifying whether or not a need exists and for ensuring compliance with the legislation.

And doth specify twelve months from the date of the publication of this Order in the *Government Gazette* as the period of time within which the Committee is required to make a final report to the Parliament on the proposal, matter or thing if the Parliament is then sitting or if Parliament is not then sitting within seven days after the next meeting of Parliament.

And the Honourable Thomas William Roper, Her Majesty's Minister of Health for the State of Victoria, shall give the necessary directions herein accordingly.

L.G. HOUSTON  
Acting Clerk of the Executive Council

RECEIPT OF SUBMISSIONS

1. Government Departments, Authorities, Agencies,

Capital Territory Health Commission  
Department of Health - New South Wales  
Department of Health - Northern Territory of Australia  
Department of Health - Queensland  
Health Commission of Victoria \*  
Minister of Health - South Australia  
Minister for Health - Western Australia  
Department of Veterans' Affairs - Repatriation General Hospital  
The Dental Board of Victoria

2. Hospitals

Dandenong Valley Private Hospital  
St. George's Hospital  
St. Vincent's Hospital

3. Other Institutions, Associations and Organisations

Australian Association of Surgeons - Victorian Branch  
Australian Dental Association - Victorian Branch \*\*  
Australian Medical Association - Victorian Branch \*\*  
Australian Institute of Radiography - Victorian Branch  
Australian Society for Ultrasound in Medicine  
Doctors' Reform Society of Victoria \*  
Monash University - Graduate School of Environmental Science  
Technisearch Limited  
The Royal Australasian College of Radiologists - Victorian Branch \*\*  
The Royal Australian College of Ophthalmologists  
The Victorian Hospitals' Association Limited  
University of Melbourne - Department of Radiology  
William A. Cook Australia Pty. Ltd.

\* provided verbal evidence

\*\* provided verbal evidence and written evidence

4. Individuals

Dr. J.T. Andrews  
Anonymous  
Mr. K.J. Davison  
Mr. G. Dircks \*  
Mr. R.W. Gibson  
Dr. D. Legge \*  
Mr. B. McCarthy \*

5. Overseas

Department of Health - New Zealand



**PARLIAMENT OF VICTORIA**

**SOCIAL DEVELOPMENT COMMITTEE**

**REPORT UPON**

**INQUIRY INTO CERTIFICATE OF NEED LEGISLATION**

**OCTOBER, 1984**

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**Ordered to be printed**

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EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

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Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment and coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

---

Tuesday, 31 May 1983

24. SOCIAL DEVELOPMENT COMMITTEE - The Honourable Evan Walker moved, by leave, That the Honourable K.I.M. Wright be discharged from attendance upon the Social Development Committee.

Question - put and resolved in the affirmative.

Ordered - That a message be sent to the Assembly acquainting them of the foregoing resolution and that a vacancy accordingly exists in the membership of that Committee.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

---

Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave and question - That, contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \* \*

- (e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

---

Wednesday, 1 June 1983

23. MESSAGE FROM THE LEGISLATIVE COUNCIL acquainting the Assembly that they have agreed to a resolution discharging the Honourable K.I.M. Wright from attendance upon the Social Development Committee and notifying that a vacancy accordingly exists in the membership of that Committee.
25. SOCIAL DEVELOPMENT COMMITTEE - Motion made, by leave and question - That Mr. Steggall be appointed a member of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

## Chairman's Introduction

In this Report the Committee has provided its assessment of:-

- (a) the objectives of Certificate of Need Programs (C.O.N.);
- (b) the overseas and interstate experience with C.O.N;
- (c) the discussion of alternatives; and
- (d) the use of C.O.N. as a tool in health planning, rationalisation and cost containment.

In this Report the Committee has examined the basis of health care in this State. It looked at the planning and rationalisation of services and facilities with a view to ensuring that funds in the health area are being expended in the most efficient and effective manner.

On the basis of the information collected from Australian and overseas sources together with evidence taken at public hearings, the Committee has come to the conclusion that the Certificate of Need system which currently operates in the U.S.A. be not introduced in Victoria. However, the Committee did conclude that measures were necessary to tackle the problems of cost containment, planning and rationalization in the health care area. The Committee has recommended a limited form of legislation and the use of better financial and accounting tools as well as various forms of Commonwealth/State action to redress the problems.

The Committee wishes to express its thanks to the many individuals and organizations who made submissions either in writing or appearing in person before the Committee.

As Chairman, I would like to record my personal thanks to the Sub-Committee, and in particular to the Chairperson, the Hon. C. J. Hogg; for her dedication, as well as the assistance received from the Committee's staff.

G. K. Ernst, M.P.

Chairman

### Committee Members

Mr. G. K. Ernst (Chairman), M.P.  
The Hon. W. Jona (Deputy Chairman), M.P.  
The Hon. H. G. Baylor, M.L.C.  
The Hon. J. L. Dixon, M.L.C.  
The Hon. C. J. Hogg, M.L.C.  
The Hon. J. E. Kirner, M.L.C.  
Mr. D. R. Newton, M.P.  
Mr. D. R. Saltmarsh, M.P.  
Mr. H. K. Shell, M.P.  
Mr. B. E. H. Steggall, M.P.  
Mrs. T. W. Wallace, M.P.  
Mr. M. T. Williams, M.P.

### Sub-Committee Members

The Hon. C. J. Hogg (Chairperson), M.L.C.  
The Hon. H. G. Baylor, M.L.C.  
The Hon. W. Jona, M.P.  
Mr. D. R. Newton, M.P.  
Mr D. M. Saltmarsh, M.P.  
Mr. H. K. Shell, M.P.  
Mr. B. E. H. Steggall, M.P.  
Mr. M. T. Williams, M.P.

### Staff

Dr. D. Stewart (Director of Research)  
Mr. H. Jennings (Secretary)

Mr. K. Gentner (Consultant)

## SUMMARY OF RECOMMENDATIONS

The Committee recommends:

1. That the Certificate of Need legislation format adopted in the United States of America be not introduced into Victoria.
2. That a system of health planning be introduced in Victoria which meets the principles of Certificate of Need and recognises the requirements of the Australian health system and the objectives which the State seeks to achieve through measures which can be implemented at the State level.

(a) PLANNING

3. That there be established within the Health Commission of Victoria a specialised State Health Planning Section for overall State health planning, and within that Section there be a group with specific responsibility to develop the Registration of Intent program (as detailed in Chapter 6.). This Section should have access to a computerised data base and have expertise within the following areas:
  - . health economics;
  - . finance and accounting;
  - . biostatistics;
  - . demography;
  - . manpower planning;
  - . the law; and
  - . medicine.
4. That the development of standards and criteria for measuring "need", in particular to develop alternatives to the current formula of bed rates per 1,000 of the population, be an initial task of the Planning Section.
5. That the establishment of a "data bank" of health planning information be a priority to enable health planners in both the public and private areas to have ready access to such information as:
  - . numbers of beds;
  - . facilities and services;
  - . location of beds, facilities and services; and
  - . new or proposed developments.

6. That a State Health Plan be developed for Victoria covering at least a four-year period. Such a plan should be presented to each new Parliament and all substantial changes made to such a plan be progressively advised to the Parliament as appropriate.
7. That the plan include the distribution, the role and function and the allocation of resources for health facilities.

(b) COMMUNITY INVOLVEMENT

8. That as the Health Commission is currently implementing decentralised district health councils, these councils should include the following in their functions:
  - . developing statements on current and future community needs;
  - . advice on the appropriateness of existing services and facilities.

(c) REGISTRATION OF INTENT

9. That the Health Commission Act 1977 be amended to establish beyond doubt the planning powers of the Health Commission.
10. That the State health planning mechanisms must include the public and private sectors.
11. That a "Registration of Intent" scheme be introduced to restrain or influence health expenditure for use in the following cases:
  - . new hospitals (public or private);
  - . new health institutions (public or private); and
  - . new or additional services with a \$300,000 threshold for replacement of equipment or for annual operating expenses associated with a new service. The \$300,000 threshold will apply to a single piece of equipment or the total component cost of an installation.
12. That Registration of Intent use a combination of categories and dollar values in the attempt to contain costs and promote effective planning of health facilities.

13. That the "Registration of Intent" standard form be developed by the State Health Planning Section. This application would then be referred to the Health Commission of Victoria for assessment.
14. That each Registration of Intent application be assessed in the context of the State Health Plan.
15. That each Registration of Intent application should be certified by the Health Commission within 60 days of receipt as:
  - . approved;
  - . not approved;
  - . approved subject to amendment; and
  - . approved subject to special conditions being met.
16. That in each case where certification is approved subject to amendment or to special conditions being met, the final certification take place within a further 30 days.
17. That "Registration of Intent" allow for joint public and private sector arrangements to be made, for example, the sharing of services and facilities and the use of contract procedures.
18. That new or amending legislation be introduced to implement the proposed Registration of Intent system.

(d) APPEALS

19. That the Minister of Health recommend an appeals mechanism to provide for persons wishing to appeal against decisions by the Health Commission in respect of Registration of Intent.

(e) RADIATION APPARATUS

20. That Section 108 AE (5)(c) of the Health (Radiation Safety) Act 1983 which is currently the subject of a sunset clause remain in the Legislation with the following amendments:

- the threshold be increased to \$200,000 and that it refer to a total radiation apparatus installation
- "market value" be defined as "new replacement cost or cost at purchase date whichever is greater".
- the term "adequate facilities" be specified in the Health (Radiation Safety) Regulations.

21. That, in the interest of controlling high capital and recurrent costs over radiation apparatus, installation should be defined as including all of the components needed to produce the finished imaging product.

22. That the Health Commission be empowered to give "approval-in-principle" to applicants indicating that radiation apparatus will be registered provided it satisfies safety and other standards imposed as part of the Regulations. A limit of twelve (12) months should apply to such an "approval-in-principle."

(f) COMMONWEALTH/STATE ACTION

23. That the Health Commission initiate measures to provide mutual access to data and expertise between the Commonwealth and the other Australian States.

24. That as a priority, the Minister of Health discuss with the Commonwealth and State counterparts ways and means to ensure the avoidance of unwarranted growth of services and containment of high cost technologies through:

- (a) changes to the Medical Benefits Schedule;
- (b) amendments to the Health Insurance Act 1973; and
- (c) use of other relevant Federal powers.

Further that the National Health Technology Advisory Panel recommend which new medical technologies should be included in the Benefits Schedule.

25. That the State Health Technology Planning Panel be appointed as an advisory body to the State Health Planning Section.
26. That the State Health Planning Section and the State Health Planning Technology Panel work closely with the National Health Technology Advisory Panel in the development of guidelines for the acquisition of new equipment.

(g) CHANGES TO FUNDING MECHANISMS

27. That management incentives should be embodied in the hospital budgetary system in the following manner:
  - (a) public hospitals set budgets on programs related to the objectives and operations of the hospital on a prospective basis;
  - (b) that the budgetary process should be designed to encourage management in hospitals to search for cost cutting techniques and increased efficiency methods without reducing the quality of the service provided;
  - (c) that no hospitals and institutions be penalised in the following financial year for savings that it had been able to make in the previous year as a result of increased efficiency.
28. That the Health Commission's Hospital Management Information System will encourage hospitals to match more correctly their revenues and expenditures for a specified time period by using accrual accounting methods and other techniques. Asset Registers of plant and equipment must be established to enable depreciation to be calculated. This is an important tool for inter-hospital comparisons providing as it does, a reflection of expenditure on capital equipment.
29. That in areas of diagnosis in the public sector, for example radiology and pathology, it would be far better for the costs of such services to be charged against the person or agency who refers them, thus ensuring better accountability and the proper allocation of costs.

30. That individual cost centres should be established within hospitals to enable capital investments and equipment decisions to be based on the performance of individual cost centres in hospital departments.
31. That the findings of this report in relation to the funding mechanisms of the health care system should be referred to the Economic and Budget Review Committee.
32. That it would seem desirable to provide better advice to the future operators of diagnostic apparatus about the indications for various procedures and that this should be as a responsibility of the Health Commission of Victoria.

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## CHAPTER 1

The **SOCIAL DEVELOPMENT COMMITTEE**, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:

### INTRODUCTION

#### 1.1 FUNCTIONS OF COMMITTEE

1.1.1 The functions of the Committee are "to inquire into, consider and report to the Parliament on -

- (a) any proposal, matter or thing concerned with the social development of the people of the State;
- (b) how the life of individuals, families and communities in the State may be improved; and
- (c) the role of Government in promoting the welfare of the people of the State -" 1

#### 1.2 TERMS OF REFERENCE

1.2.1 To receive submissions and evidence with regard to matters referred to in the following terms of reference and to report and make recommendations with regard to these matters in order to determine the desirability or otherwise of introducing Certificate of Need Legislation that would enable the Health Commission of Victoria to regulate the provision of capital, facilities and equipment for use in diagnosis or treatment for medical purposes.

Without limiting the scope of the inquiry the Committee is required to report on:

---

1. Parliamentary Committees Act 1968, Section 4E

1. The objectives to which Certificate of Need Legislation is addressed (including consideration of objectives concerning maintenance of cost control, quality of care and ensuring balanced planning of health services).
2. Overseas or interstate experience with Certificate of Need Legislation.
3. Alternative mechanisms for achieving the objectives of Certificate of Need Legislation including the possibility of joint Commonwealth-State action.
4. Whether or not Certificate of Need Legislation should apply to all types of capital equipment or only prescribed classes or types of equipment.
5. Whether or not Certificate of Need Legislation should be limited to equipment with a capital cost of more than a set dollar amount.
6. Whether or not Certificate of Need Legislation should apply to both hospital and non-hospital facilities.
7. The structures and mechanisms to be used in developing criteria and standards for identifying whether or not a need exists and for ensuring compliance with the legislation.

### 1.3 Amalgamation of the Certificate of Need and Radiation Apparatus References

- 1.3.1 Following the receipt of a reference from the Parliament on 4 May 1983 to inquire into Radiation Apparatus, the Governor-in-Council made an additional reference on 12 October to the Committee, "to determine the desirability or otherwise of introducing Certificate of Need Legislation that would enable the Health Commission of Victoria to regulate the provision of capital, facilities and equipment for use in diagnosis or treatment for medical purposes."
- 1.3.2 The Committee considered that there was considerable overlap between these two references and that there were areas of similarity, for example:
  - both are concerned with the health care area;
  - both involve aspects of planning and rationalisation;
  - both include legislation reviews intended to restrict capital equipment thereby reducing costs;

- both include quality of care and safety matters in the health care area; and
- both are concerned with cost control.

1.3.3 The Committee considered that the Certificate of Need (C.O.N.) inquiry clearly implied an overall responsibility for equipment and facilities in the health care field - including the equipment considered specifically in the Radiation Apparatus inquiry. The Committee therefore decided to treat the two references as aspects of the same general inquiry, but to present separate Reports as required.

#### 1.4 The control of radiation apparatus through Certificate of Need

1.4.1 A major aspect of the Health (Radiation Safety) Act 1983 is the control of the location of radiation apparatus in this State. This is achieved through the insertion of section 108 AE(5) (c) in the Health Act 1958.

1.4.2 It was put to the Committee in public hearings and in many written overseas and Australian submissions that the section in question can be construed as a type of C.O.N. legislation.

1.4.3 The Committee considered that a number of aspects of section 108 AE(5)(c) required clarification, in particular:

- (a) whether the \$80,000 limit referred to a total installation cost or the cost of component parts;
- (b) the meaning of the term "market value".

1.4.4 The Committee considers that the entire section 108 AE(5)(c) should be considered under the C.O.N. reference and the aforementioned issues therefore form Chapter 7 of this report.

#### 1.5 Consultants

1.5.1 The Committee commissioned Nicholas Clark and Associates to provide an objective, independent assessment into certain aspects of the control,

location and use of radiation apparatus for its inquiry into Radiation Apparatus. The findings of the consultants, with extended terms of reference, have been taken into consideration in this report.

## 1.6 Outline of Certificate of Need legislation

### 1.6.1 Certificate of Need legislation has been defined as:

"legislation to the effect that those individuals or health facilities proposing to introduce new or additional inputs, for example, new buildings, major equipment or services, must first obtain approval from a statutory body or government agency for their introduction, the basis for such approval being that there is sufficient need for these facilities in an area. That is, new facilities may not be approved if they are considered to be surplus to requirements and if they appear to duplicate existing under-used facilities nearby." 2

1.6.2 C.O.N. legislation as such exists only in the U.S.A. in a context consisting largely of a private hospital system. The services which are made available in the U.S.A. are not directly subject to governmental decisions. C.O.N. regulation was thus designed to restrict or regulate the expansion of the health services area in response to pressure from private market entrepreneurs urging for such expansion. In a climate where providers can almost always attract local support for more facilities in a particular area, and where it is popularly considered that more health facilities are intrinsically a "good thing", C.O.N. legislation was introduced in an attempt to control overall health care costs, based on the rationale that once more facilities are made available they will almost certainly be used.

1.6.3 Currently, under C.O.N. legislation in the U.S.A. the decision as to whether an application should obtain C.O.N. approval is based on an assessment of the proposal according to certain defined standards. In deciding whether a "sufficient need" exists, regulatory bodies usually rely on the principle of equity - similar levels of care being available to the population across a State; and on standards tying levels of service delivery to populations. Other standards or criteria may take into account the competitive nature of a service, and the likely quality and safety of the service. "Needs" standards often specify maximum levels as to the provision of particular services.

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2. Submission of the Health Commission of Victoria, June 1984, p.1.

1.7 Current regulatory controls over health facilities in Victoria

1.7.1 The Health Commission's existing controls over public hospitals and its CON-type powers over private hospitals are contained in the Hospitals and Charities Act 1958, the Health Act 1958 and the Health Commission Act 1977.

1.7.2 Table 1 sets out a summary of current CON-type entry restrictions under State legislation:

**TABLE 1**

**VICTORIA : SUMMARY OF CURRENT CON-TYPE ENTRY  
RESTRICTIONS UNDER STATE LEGISLATION\***

	<u>Present</u>	<u>Not Present</u>
<b>1) <u>CONTROL OF BED SUPPLY</u></b>		
- public acute hospitals	X	
- public psychiatric hospitals	X	
- private hospitals	X	
- nursing homes	X	
- day procedure facilities		
<b>2) <u>CONTROL OF NEW BUILDINGS</u></b>		
- public hospitals, community health centres	X	
- public psychiatric hospitals	X	
- private hospitals	X	
- nursing homes	X	
- day procedure facilities	X	
- doctors' rooms		X
- free-standing pathology laboratories		X
<b>3) <u>CONTROL OF EQUIPMENT</u></b>		
<b>(a) Expensive radiological equipment</b>		
- public hospitals	X	
- private hospitals	X	
- free-standing	X	
<b>(b) Other Equipment</b>		
- public hospitals	X	
- private hospitals		X
- free-standing		X

**Note:** \* This refers to controls over the entry of new providers, and does not include the power to close existing beds or services in the private sector.

1.7.3 The extent of the Health Commission's existing controls over public and private hospitals is set out below:

(a) Public Hospitals

"...The Hospitals and Charities Act 1958 deals with the operation of public hospitals, hospitals for the aged, hostels for the aged, community health centres and ambulance services, all of which are controlled by regulation of finance and staff establishments.

The management of a public hospital is, broadly-speaking, responsible for ensuring that quality of care and standards are maintained within the hospital as well as for financial control of the hospital, although the latter is closely monitored by the Health Commission. However, the Commission believes it also has a role in directing the means by which adequate standards of care may be assured and to this end the Commission encourages the development and implementation of mechanisms which help hospitals and individuals to be responsible and accountable for the quality of patient care. These mechanisms include the delineation of privilege for doctors, peer review, quality assurance programs and the development of standards and guidelines. The Commission's view is that emphasis should be on co-operation and self-regulation rather than on the imposition of mandatory procedures.

...The Commission has final responsibility for the current and capital budgets of these institutions, with the proviso that minor works of up to \$50,000 may be authorised by a hospital without prior Commission approval.

The Hospital Capital Works Program is initiated and monitored by the Hospitals Division of the Commission and programmed maintenance is conducted under the Minor Works Program. Each year, submissions for each hospital are examined, priorities assigned and approvals within the budget limit given. The Building and Services Division assists in the planning for such facilities and sees that all buildings works for these and for private health-care facilities conform to Commission standards and Public Buildings regulations. The Equipment Section of the Division ensures that appropriate equipment is purchased, that existing equipment is inspected, and helps set standards for medical equipment."

(b) Private Hospitals

"The Commission's legislative controls of a CON-type over private hospitals are contained in the Health Act ...

Sections 178-186 of the Health Act 1958 (as amended) concern private hospitals and clauses under Section 182 currently state that ...

"(4) The Commission shall not approve the plans or specifications (for erection building or rebuilding or, or alternatives or addition to any private hospital) if it considers that the proposed works:

- (a) are not consistent with the proper supervision, maintenance and co-ordination of health services in Victoria, or
  - (b) would result in more than adequate facilities becoming available for the provision of care of a prescribed kind or kinds to the population of the area in which the works are proposed.
- (5) Every approval under this section shall be subject to the following conditions in addition to any other conditions imposed by the Commission, namely:
- (a) Cost increases of hospital and related services shall be minimized; and
  - (b) Where additional beds are approved the use of beds shall be closely monitored.
- (6) Subject to the Administrative Law Act 1958 a decision of the Commission not to approve plans and specifications pursuant to the provisions of sub-section (4) shall be conclusive.

Health Commission control over private hospitals' size may largely determine the amount of equipment to be found in such hospitals but this is not always the case, as even relatively small (by public hospital standards) hospitals may provide advanced surgery, if they have doctors using the hospital for this purpose. As well as the C.O.N. controls mentioned above, the Health Commission also must approve building and safety specifications and minimum staffing levels. Under the Act, both private hospitals and private nursing homes are classified as "private hospitals", and the approval for registration of new or additional beds is finally vested in the Commission. Approval of private hospital and nursing home beds for subsidy payment, however, is a Commonwealth matter.

Under the Act, the Health Commission may also impose special conditions on the registration of any private hospital. This power has not been used to any extent, although it may be able to be used to direct hospitals to provide minimum staffing levels to adequately maintain specialist units.

Regulations under the Act now permit day surgery units to be registered as private hospitals." 3

## CHAPTER 2

### OBJECTIVES OF CERTIFICATE OF NEED LEGISLATION

#### 2.1 INTRODUCTION

2.1.1 The Committee was required to report on "the objectives to which C.O.N. legislation is addressed (including consideration of objectives concerning maintenance of cost control, quality of care and ensuring balanced planning of health services)." Because of the listing of such a variety of objectives in the terms of reference, the implication was clear to the Committee that there was no single or critical objective. This fact also received emphasis in the examination of evidence.

#### 2.2 The American experience

2.2.1 The objectives or goals of C.O.N. legislation in the U.S.A. can be summarised as:

- (a) cost containment is usually a major goal of C.O.N. programs. This is because the State itself is a major:
  - employer, paying health benefits to thousands of employees;
  - provider, operating State hospitals and otherwise providing health services directly; and
  - re-imbursing through its Medicare program.
- (b) fostering competition has been adopted as a goal in most State C.O.N. programs, often simply to meet the Federal requirements for review criteria.
- (c) access to care - and the improvement of access is one of the commonly adopted goals of C.O.N. programs, usually being embodied in review criteria.
- (d) to ensure availability of needed health services to all persons.

- (e) to ensure access to health services by low-income and rural populations
- (f) to achieve a reduction in utilisation of high-cost in-patient services through careful allocation of facilities and services to meet minimum health care needs rather than by market demands.
- (g) to promote the use of existing resources.

### 2.3 Objectives perceived by the Health Commission

The Health Commission stated in its submission that:

"Additional C.O.N. Legislation would be expected to help achieve three major objectives of the health services, namely, cost control, the provision of high-quality, safe services, and the provision of a balanced range of services, where balance refers to both the range of treatments available and the geographical accessibility of services. The Health Commission is actively engaged in the pursuit of these objectives in the public sector and, as its statutory responsibilities include "the overseeing, supervision, maintaining and co-ordination of health services in Victoria," the Commission also has a role in ensuring these objectives are met in the private sector. Under a regional system, area-wide planning will attempt to co-ordinate the activities of these two sectors." 4

### 2.4 Conclusions

The Committee recognises the validity of such stated objectives. It agrees that any proposed system of regulation should have as major objectives:

- the avoidance of unnecessary and costly duplication of health facilities and services, or fragmentation;
- the orderly development of health services and resources according to identified priorities;
- the improvement of the quality of facilities and service projects and quality of care;
- the stimulation of the development of lower cost alternatives to high-cost in-patient services and facilities;
- the improved distribution of health care facilities and services;
- the improved access to health services by low-income and rural populations.

The Committee points out that this list of objectives is not placed in any order of priority.

## CHAPTER 3

### COMPARATIVE EVIDENCE ON CERTIFICATE OF NEED

#### 3.1 INTRODUCTION

3.1.1. The overwhelming bulk of the evidence concerning C.O.N., its introduction, implementation, impact and evaluation comes from the U.S.A., since it is only in America that C.O.N. legislation has been systematically introduced. Since the first C.O.N. legislation in New York in 1964 there has been extensive research and evaluation of such regulatory mechanisms, and the Committee has had access to such evidence. The Committee has, however, remained aware of the very different health care systems, regulatory climate and clear cultural differences in evaluating such overseas evidence.

#### 3.2 Use of C.O.N. in the United States of America

3.2.1 In 1974, in response to perceived problems and issues in the health care area, the U.S. Congress enacted the National Health Planning and Resources Development Act (NHPRD). Four goals were set out, with a fifth added by a 1979 amendment:

- (a) restrain increases in the cost of providing health services;
- (b) prevent unnecessary duplication of health resources;
- (c) increase the accessibility, acceptability, continuity and quality of health services;
- (d) improve the health of all citizens; and
- (e) preserve and improve competition in the provision of health care.

3.2.2 The C.O.N. mechanism set out in the NHPRD Act was that each State was required to establish:

- regional health planning agencies (Health Service Agencies);
- a State level planning agency; and
- a Governor appointed State-wide health co-ordinating council.

These bodies study health problems, formulate priorities and propose solutions. The Act also required each State to develop and administer a C.O.N. program which would:

"... provide for review and determination of need prior to the time (new health) services, facilities and organisations are offered or developed or substantial expenditures are undertaken in preparation for such offering or development, and provide that only those services, facilities and organisations found to be needed shall be offered or developed in the State." 5

3.2.3 In order to comply with the requirements of this national legislation and to guarantee the continuation of Federal public health service funds, States throughout America began to pass legislation enacting C.O.N. Programs. All of the States (except Louisiana) have C.O.N. Programs. Forty eight (48) of the States have thresholds, i.e. a dollar value used for determining whether or not a piece of equipment, new health service or facility requires C.O.N. approval. By law, States can have lower, more stringent thresholds than the Federal requirement if they wish, but they cannot have higher thresholds. Twenty six (26) States have established thresholds which are lower than the current Federal requirements.

3.2.4 Thirty-five (35) States with C.O.N. Programs are administered by State Health Planning and Development Agencies and are located in State Departments of Health. Of the remainder, thirteen (13) are administered by independent agencies or commissions and three (3) are located in other separate agencies.

3.2.5 Twenty-four (24) States charge application fees or other user fees to help support the cost of administering their C.O.N. programs. Evidence received indicates that the majority of States (approximately thirty (30)) would continue their C.O.N. programs regardless of whether it was required by Federal health planning law. Of the remainder, ten (10) probably would not continue their program.

### 3.3 Evaluation of C.O.N. in the United States of America

3.3.1 Beginning in the mid-1970's, a succession of studies concerning the effectiveness of C.O.N. was published. These have generally indicated that:

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5. Kansas Legislative Research Department, "Background of Health Planning" November 4, 1982 - C.O.N. Program - Presented to Health Planning Review Commission 9 November 1983

- C.O.N. may lower capacity (for bed growth);
- C.O.N. has no consistent effect on other forms of capital investment such as those for new equipment or services; and
- C.O.N. by itself has had no effect on hospital costs.

3.3.2 The history of mandatory C.O.N. Legislation since its inception in the U.S.A. has produced inconsistent evidence regarding the effectiveness of C.O.N.. Evidence is conflicting as to whether C.O.N. is achieving the intended outcomes of decreased hospital capital expenditures and slower rates of hospital cost increase. Some sources suggest that C.O.N. has had a significant intermediate effect on the amount and nature of hospital capital investment by reducing the dimensions and costs of many hospital expansion projects and preventing the commencement of others.

Studies have indicated that States with stringent C.O.N. programs in combination with stringent rate-setting programs have experienced lower growth in both Computerised Tomography services and hospital costs.

3.3.3 Despite the inconsistent evidence, a number of issues appear clear:

- (a) A major cause of operational problems with C.O.N. can be attributed to over-prescription by the Federal Government in both law and implementing regulations, and a resultant lack of flexibility to allow States to tailor these programs to suit the specific needs of each State.
- (b) In some States there appears to be confusion between the State and the Health Service Agency on procedural issues and specific projects. The expression of these problems in practice has been a costly duplication of activities, an excessive number of appeals, and lengthy delays for applicants. The main reason for these problems stems from the fact that Federal law and regulations require or at least encourage separate procedures, plans and review criteria rather than mandating for a compulsory co-ordinated process.
- (c) In general terms decisions reached on C.O.N. have sometimes run counter to established plans at either the Health Service Agency or

State level or both. In many cases the politics of a particular application have overruled the plan, or reviewers have found reason to approve projects because they are deemed unique, or "one off".

3.3.4 From the submissions received, there appears to be consensus in the U.S.A. that modifications to current C.O.N. programs are desirable and could include the following:

- . changes in threshold limits;
- . limiting the scope of coverage;
- . streamlining the process;
- . changing program administration to simplify control and linking C.O.N. more clearly to other health regulatory mechanisms in States, especially rate review;
- . using C.O.N. to create a more competitive environment;
- . using C.O.N. to promote access to care for the underprivileged;
- . basing the program on "relative need", rather than attempting to specify need in absolute terms;
- . C.O.N. should seek to control access to hospitals, and availability of patient services;
- . C.O.N. should focus on patient health care programs which are the most costly elements of the system; and
- . C.O.N. should expand the review to include the full cost of health services, not only the capital costs. Further, it is generally considered that the review should be a cost-effectiveness review.

3.3.5 The Committee sees merit in the observation of the Health Commission that:

"The major arguments usually advanced against C.O.N. legislation are taken from United States experience and, apart from argument against the regulation of the private sector in general, they are that the legislation does not work and is very costly to administer ..... in this State these arguments may be seen as challenged rather than necessary outcomes." 6

### 3.4 Experience in countries other than the U.S.A.

3.4.1 C.O.N. Legislation as a fully-fledged form of regulation of health services, has not been used in other developed countries, most of which have some form of nationalized health insurance.

3.4.2 The submission of the Health Commission to the Committee (p.36) states:

"Hospital construction and, to some extent, other capital investments have been subject to government controls in West European countries. Hospital standards are developed centrally in Britain, the Netherlands, and France. France has a National Committee that must approve the purchase of major equipment. In Canada, the federal government exerts budgetary pressure to limit facilities, and global-hospital budgeting and capital controls operate through the budget process at the provincial level. West Germany has a separate capital budget controlled at the State level. However, although the existence of excess hospital beds has been perceived as a serious problem in both the U.S. and Canada, this perception has not prevailed in Western Europe, which has a larger number of beds per capita".

3.4.3 In both the Federal Republic of Germany and the German Democratic Republic, although health insurance schemes are financed differently, health care legislation has granted state authorities absolute planning rights. In East Germany planning is centralized whereas in West Germany the states have final authority over planning.

### 3.5 Responses Elsewhere in Australia

3.5.1 The position of public and private hospitals in other Australian States is similar to that in Victoria. However, not all States have legislation aimed at controlling the numbers of beds or equipment available in such facilities.

3.5.2 Recent New South Wales legislation provides for regulations to control the equipment used in private hospitals. As these regulations are currently being introduced, their effects were unable to be assessed by the Committee.

3.5.3 The Health Commission advised the Committee that it was unaware of any other State having any form of C.O.N. type regulations except for Clause (5)(c) of Item 108 AE of section 5 of the Health (Radiation Safety) Act 1983 which was referred for consideration in the reference and is dealt with in a later Chapter of this report. - 15 -

## CHAPTER 4

### ORGANIZATION OF THE HEALTH CARE SYSTEM

#### 4.1 INTRODUCTION

4.1.1 The previous chapters discuss the objectives and effectiveness of C.O.N. Legislation. It should be noted that evidence has been principally drawn from America as it is the only country with C.O.N. legislation in use.

#### 4.2 A comparison of the Australian and U.S.A. Health Care Systems

4.2.1 Health care systems in Australia, from the advent of voluntary health insurance, have for the large part not been free markets, despite some health care providers' claims that voluntary health insurance only acts to 'underpin' the free market. In reality, the current Australian health system reflects actions by both providers and consumers which are consistent with the presence of a continuing supportive third party payment system.

4.2.2 In a truly free market, unsubsidised costs would be borne by consumers, and providers limited by the ability of the consumer to pay. Such a system, if used for health care, means that the majority of people would be unable to meet unforeseen health care costs for other than the occasional minor condition. Therefore, both systems in practice have a third party involvement, with the U.S. having a limited third party involvement, whereas in Australia it is almost total.

4.2.3 If it is accepted that costs of health care cannot be adequately met by the majority of the community, it follows that some third party payment system must be established, and it must then be decided whether this should be wholly in the public or private sectors, or a combination of both.

4.2.4 Since 1 February, 1984, Medicare has provided a third party payment system wholly based on public sector finance. This is in contrast with American

health system which is a private sector system, working largely on a free market basis. Voluntary unsubsidised health insurance funds provide cover for the majority of workers and those not in receipt of welfare benefits. However, it is recognised that for many employees, employers pay the contributions in part or in full by mutual agreement.

4.2.5 Under Medicare, hospital and other services supplied from both public and private sectors are heavily, if not totally subsidised. A free market system cannot alone provide an effective level of care for the whole community.

4.2.6 The Committee believes that an incentive for the private sector to introduce controls is essential in order to prevent over-servicing, fraud and to lead to the institution of appropriate measures of control.

### 4.3 Relevance of C.O.N. to Australia

4.3.1 In accordance with its terms of reference the Committee examined in detail the American experience with C.O.N. programs and has come to the conclusion that due to the differing health care systems operating in the U.S.A. its relevance is limited.

4.3.2 The major feature of any C.O.N. Legislation is the necessity for a definition of "need", by means of developing standards and criteria agreed to by users and potential providers. The Committee considers that in the U.S. far more work has been accomplished in this area than in Victoria.

4.3.3 Various criteria for determining "need" have been established within Victoria centred around bed rates. In some circumstances this has provided a sound basis for determining need. However, it is considered that this area requires far more development in Victoria. For example, many other health areas are not directly related to bed rates, such as radiology, open heart surgery, day care services, radio-therapy and X-Ray services not within a health institution.

**The Committee recommends:**

1. That the Certificate of Need format adopted in the United States of America be not introduced into Victoria.
2. That a system of health planning be introduced in Victoria which meets the principles of Certificate of Need and recognises the requirements of the Australian health system and the objectives which the State seeks to achieve through measures which can be implemented at the State level.

## CHAPTER 5

### HEALTH PLANNING

#### 5.1 INTRODUCTION

- 5.1.1 The Committee considers that there is a need for the overall planning of health care in this State, and that the right planning balance between the public and private sector must be found. Many submissions put to the Committee recognises that planning was a major problem in this State, especially in the areas of rationalisation of existing services and facilities, and in planning for future needs.
- 5.1.2 The critical element in all types of health planning, and also the basis for C.O.N. type programs, is the requirement to develop standards and criteria to determine "need".
- 5.1.3 The definition of "need" is probably the most significant problem facing the health care area in this State, and from information available from the U.S.A. it is also a major problem in that country.

#### 5.2 The Need to Plan

- 5.2.1 The Committee defines "health planning" as a process in which health issues are identified and analysed, and resources applied to resolve those issues.
- 5.2.2 Due to the social implications of health planning and the significance to the community of the health care field as a whole, Government intervention is essential to facilitate access to health services by all who need them.
- 5.2.3 The nature of health expenditure and the general health needs of the community, require the public sector of the health care area to be responsible for the development of future health planning and the equitable and effective distribution of health services and facilities in this State.

5.2.4 The Committee considers that the real issue is not whether health planning is needed but rather that the Government has the capacity to undertake health planning in a way which ensures that the whole community has access to quality health care.

### 5.3 Planning resources

5.3.1 This Report's proposals, technological change in the medical field and community needs all highlight the need for health planning, which ensures that the limited amount of funds available for health are expended in the most effective and efficient manner.

5.3.2 Accurate and reliable health planning requires a strong data base, expert staff and appropriate resources. A computerised data bank should be established to enable all health planners in both public and private sectors to obtain ready access to relevant information. Uniformity in data collection is vital for analysis and interpretation for future planning and rationalisation.

Those involved in the planning section should remain as independent as possible from those involved with assessment and implementation of Registration of Intent (see Chapter 6).

5.3.3 The staff resources available to the Health Commission are not adequate to allow for the type and quality of planning needed by this State. This lack of health planning resources must be addressed as soon as possible to allow the following specialized disciplines to be made available to the Health Commission:

- . health economics;
- . finance and accounting;
- . biostatistics;
- . demography;
- . manpower planning;
- . the law; and
- . medicine.

5.3.4 The Health Commission should establish a specialised State Health Planning Section allowing for input from the above disciplines. Such a section should remain independent, as far as possible, from those within the Health Commission who implement the regulations.

5.3.5 The priority task of this State Health Planning Section should be to develop standards and criteria for measuring "need" in the health care area and in particular the development of alternatives to the current Commonwealth/State formula of bed ratio per 1000 of the population.

#### 5.4 State Health Plan

5.4.1 The Committee was concerned to receive information that there is no overall health plan for Victoria.

5.4.2 The Committee recommends that a State Health Plan be developed for Victoria covering at least a four-year period. Such a plan should be presented to each new Parliament and all substantial changes made to such a plan be progressively advised to the Parliament as appropriate.

5.4.3 The plan should include the distribution, the role and function and the allocation of resources for health facilities.

#### 5.5 Consumer Involvement and Awareness

5.5.1 The Committee considers that there is a need for increased public debate in the area of what the community wants from the health care service as compared to what it can afford.

5.5.2 The Committee considers that the regionalisation of the Health Commission will provide a greater community involvement and participation in health matters.

5.5.3 The Committee recommends that the identification of community health problems and proposed health system solutions be part of the health planning process.

- 5.5.4 The Committee recommends that in order to conduct health planning as outlined above, the community must be involved to a much greater extent than has occurred previously.
- 5.5.5 The Committee recommends that education and promotional techniques be used by the Health Commission to inform the public of quality controls and other measures which ensure equitable standards are implemented and maintained.
- 5.5.6 The Health Commission is currently implementing decentralised district health councils and the Committee considers these councils should include the following in their functions:
- developing statements on current and future community needs;
  - advice on the appropriateness of existing services and facilities.

**The Committee recommends:**

3. That there be established within the Health Commission of Victoria a specialised State Health Planning Section for overall State health planning, and within that Section there be a group with specific responsibility to develop the "Registration of Intent" program (as detailed in Chapter 6). This Section should have access to a computerised data base and have expertise within the following areas:
- health economics;
  - finance and accounting;
  - biostatistics;
  - demography;
  - manpower planning;
  - the law; and
  - medicine. (5.3.3)
4. That the development of standards and criteria for measuring "need", in particular to develop alternatives to the current formula of bed rates per 1,000 of population, be an initial task of the Planning Section. (5.3.5)

5. That the establishment of a "data bank" of health planning information be a priority to enable health planners in both the public and private areas to have ready access to such information as:
  - number of beds;
  - facilities and services;
  - location of beds, facilities and services; and
  - new or proposed developments.
6. That a State Health Plan be developed for Victoria covering at least a four-year period. Such a plan should be presented to each new Parliament and all substantial changes made to such a plan be progressively advised to the Parliament as appropriate.
7. That the plan include the distribution, the role and function and the allocation of resources for health facilities.
8. That as the Health Commission is currently implementing decentralised district health councils, these councils should include the following in their functions:
  - developing statements on current and future community needs;
  - advice on the appropriateness of existing services and facilities.

## CHAPTER 6

### REGISTRATION OF INTENT

#### 6.1 INTRODUCTION

6.1.1 On the basis of the verbal and written evidence and supporting details, the Committee is of the opinion that C.O.N. Legislation as used in the U.S.A. should not be introduced in Victoria.

6.1.2 On the other hand, evidence presented to the Committee demonstrated a general agreement that action is necessary to curb the spiral of health care costs in this State and ensure that the available funds are expended in the most efficient and effective manner.

#### 6.2 Registration of Intent

6.2.1 The Committee recommends that the Health Commission Act 1977 be amended to establish beyond doubt the planning powers of the Health Commission.

6.2.2 Evidence presented to the Committee indicates that there is a need to regulate health expenditure and in particular to restrain unwarranted health expenditure. Further evidence suggests a strong relationship between costs and the availability of hospital beds and between costs and the lack of control on the provisions of facilities and major technical equipment in the private sector.

6.2.3 The Committee recommends that in order to plan for health care in this State, planning mechanisms must include the public and private sectors.

6.2.4 To allow for such planning the Committee recommends that legislation be introduced to require prospective providers to prepare a "Registration of Intent" in the following cases:

- new hospitals (public and private);
- new institutions (public and private);

- new and additional services with a \$300,000 threshold for replacement of equipment or for annual operating expenses associated with a new service. The \$300,000 threshold will apply to a single piece of equipment or the total component cost of an installation.

6.2.6 Thresholds should be reviewed annually and indicators such as the consumer price index be taken into account when the level is reviewed. The \$300,000 threshold should apply to a single piece of equipment or the total component cost of an installation.

### 6.3 Application of Registration of Intent

6.3.1 The Committee recommends that Registration of Intent should use a combination of categories and dollar values in its attempt to contain costs and promote rationalisation and planning of health facilities.

6.3.2 The Registration of Intent would:

- collect uniform data for planning and rationalisation purposes;
- detail the financial costs of the proposal indicating the sources of funding;
- estimate the effect of the proposal on existing service(s) and/or lack of such service(s) by means of impact statements; and
- establish the reasons for location of the facility or service.

The Committee considers that Registration of Intent provides a basic tool to enable health planners to assess the value and requirement of the proposed service or facility.

6.3.3 The Committee considers that the Registration of Intent legislation should be applied equally to both the public and private sectors. In the public sector this would entail some deregulation since at present all purchase items over \$50,000 require Health Commission approval. The legislation proposed by this Committee should replace this area of the Health Commission Act 1977.

## 6.4 Implementation

- 6.4.1 The Committee recommends that a Registration of Intent standard form be developed by a State Health Planning Section.
- 6.4.2 A Registration of Intent would be prepared by the prospective applicant and referred to the Health Commission of Victoria where it would be assessed.
- 6.4.3 The Committee recommends that each Registration of Intent application be assessed in the context of the State Health Plan.
- 6.4.4. The Committee recommends that each Registration of Intent should, within sixty days from receipt of the form, be certified by the Health Commission as:
- approved;
  - not approved;
  - approved subject to amendment; and
  - approved subject to special conditions being met.
- 6.4.5 In the case of certification approved subject to amendment or approved subject to special conditions being met, the final certification must take place within a further 30 days.
- 6.4.6 The Committee recommends that the system allow for joint public sector and private sector arrangements to be made, for example, the sharing of services and facilities and the use of contract procedures.

## 6.5 Mechanism for Appeals

- 6.5.1 To provide for persons wishing to appeal against decisions by the Health Commission in respect of Registration of Intent, the Minister of Health should recommend an appeals mechanism.

### The Committee recommends:

9. That the Health Commiission Act 1977 be amended to establish beyond doubt the planning powers of the Health Commission. (6.2.1.)

10. That the State health planning mechanisms must include the public and private sectors. (6.2.3)
11. That a "Registration of Intent" scheme be introduced to restrain or influence health expenditure for use in the following cases:
  - new hospitals (public or private);
  - new health institutions (public or private); and
  - new or additional services with a \$300,000 threshold for replacement of equipment or for annual operating expenses associated with a new service. The \$300,000 threshold will apply to a single piece of equipment or the total component cost of an installation. (6.2.4)
12. That Registration of Intent use a combination of categories and dollar values in the attempt to contain costs and promote effective planning of health facilities. (6.3.1)
13. That the "Registration of Intent" standard form be developed by the State Health Planning Section. This application would then be referred to the Health Commission of Victoria for assessment. (6.4.1); (6.4.2)
14. That each Registration of Intent application be assessed in the context of the State Health Plan. (6.4.3)
15. That each Registration of Intent application should be certified by the Health Commission within 60 days of receipt as:
  - approved;
  - not approved;
  - approved subject to amendment; and
  - approved subject to special conditions being met. (6.4.4)
16. That in each case where certification is approved subject to amendment or to special conditions being met, the final certification take place within a further 30 days. (6.4.5)

17. That "Registration of Intent" allow for joint public and private sector arrangements to be made, for example, the sharing of services and facilities and the use of contract procedures. (6.4.6)
18. That new or amending legislation be introduced to implement the proposed Registration of Intent system.

(d) APPEALS

19. That the Minister of Health recommend an appeals mechanism to provide for persons wishing to appeal against decisions by the Health Commission in respect of Registration of Intent. (6.5.1)

## CHAPTER 7

### ITEMS REFERRED FROM THE INQUIRY INTO RADIATION APPARATUS

#### 7.1 INTRODUCTION

##### 7.1.1 Section 108 AE(5)(c) of the Health (Radiation Safety) Act 1983 states:

"The Commission shall not register any radiation apparatus or sealed radio-active source to be used for the diagnosis or therapy of human beings if it considers that the registration - in the case of radiation apparatus or a radio-active substance including nuclear medicine or radiological equipment which is ancillary to the apparatus or radio-active substance which the Commission is satisfied has a market value at the time of the application for registration exceeding \$80,000 or such other high prescribed amount, would result in more than adequate diagnostic or therapeutic facilities of the type proposed to be registered becoming available having regard to the place where it is proposed to be used."

##### 7.1.2 The provision and control of radiation apparatus in respect of section 108 AE(5)(c) of the Health Commission Act 1977 have been referred from the Inquiry into Radiation Apparatus, <sup>7</sup> since the Committee deemed this to be a Certificate of Need matter.

#### 7.2 Interpretation

##### 7.2.1 Section 108 AE(5)(c) of the Act gives the Health Commission certain powers over the sale and distribution of ionizing and other radiation apparatus. Previous legislation only provided such powers for radioactive substances and not for radiation apparatus.

##### 7.2.2 The main focus of the section appears to be the control of health costs and the regulation of the distribution of high capital cost equipment as there is an \$80,000 threshold limit, over which equipment purchases require prior approval.

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#### 7. Social Development Committee - Report on Inquiry into Radiation Apparatus, September 1984.

7.2.3 The Committee was informed that there are four main classes of high capital cost apparatus within the ambit of the section:

- Computer Tomography Scanners;
- Nuclear Magnetic Resonance Imaging apparatus;
- Linear Accelerator units; and
- Cobalt Teletherapy unit.

7.2.4 The above classes of equipment are clearly the most expensive types of radiation apparatus currently available for diagnosis and therapy.

However, the Committee considers that there are a number of lower cost apparatus that have unit costs greater than the \$80,000 threshold. Some of such equipment is listed below with estimated costs:

- Advanced diagnostic ultrasound apparatus (\$80,000 - \$150,000);
- Mobile C-arm X-Ray apparatus (\$100,000 - \$225,000);
- Therapeutic lasers (ophthalmology and dermatology) (\$80,000 - \$110,000);
- Remote control fluoroscopy table (\$100,000 - \$150,000);
- Digital subtraction radiography apparatus (angiography and cardiology) (\$150,000 - \$300,000);
- Scintillation cameras (\$80,000 - \$100,000).

Information from manufacturers suggests that many items of conventional equipment (e.g. conventional X-ray generators) are approaching or just over the \$80,000 threshold limit.

### 7.3 Objectives of Section 108 AE(5)(c)

7.3.1 The Committee considers that the two main objectives of this Section are the control of health costs and the regulation of the distribution of high capital cost equipment.

- 7.3.2 The Committee's main concern is the control of recurrent expenditure in the health care area, as it has been put to the Committee that only about eight per cent of all health expenditure is capital expenditure with the remaining 92 per cent being recurrent expenditure. <sup>8</sup>
- 7.3.3 In the Committee's view advanced technological equipment such as the Computer Tomography Scanner or Nuclear Magnetic Resonance Imaging apparatus could generate significant recurrent expenditures.
- 7.3.4 The Committee understands that as the current Commonwealth benefit for an examination on Computer Tomography Scanner is of the order of \$200, and under the medical benefits scheme, once a decision is made to undertake treatment (or conduct an examination) there is an obligation for the Commonwealth to pay for it.
- 7.3.5 The Committee considers that the objective of section 108 AE(5)(c) is to regulate the distribution and location of therapeutic and diagnostic apparatus.
- 7.3.6 Having considered the above objectives the Committee concludes that there is a need to limit the absolute number of apparatus of a particular kind in this State, dependent upon the needs of the community and future planning considerations. It is therefore clearly desirable that units are distributed in a way that reflect the needs of the community.

7.4 Adequacy of section 108 AE(5)(c)

- 7.4.1 The Committee considers that section 108 AE(5)(c) makes a limited contribution to the control of high-cost radiation apparatus.
- 7.4.2 The Committee recommends that the matter of control and regulation of lasers should be subject to a review which would include the need to formulate legislation.

Under the Public Health Act 1958 the Health Commission of Victoria has control over the use of lasers for entertainment purposes. This aspect should also be taken into account by any review committee.

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8. Minutes of Evidence - 20 June 1984. p.35

- 7.4.3 Concern was expressed in submissions to the Inquiry into Radiation Apparatus that section 108 AE (5)(c) would restrict the mode of practice of specialists by limiting the apparatus available to them. In part, this concern was based on the perception that many items of equipment (other than the four "big-ticket" items mentioned in paragraph 7.2.3) would be regulated by the HCV. The Committee therefore considers that the legislation should be amended to increase the threshold from \$80,000 to \$200,000.
- 7.4.4 The current dollar limit allows for each component part to be separately invoiced in order to come below the threshold. This defies the spirit of the legislation which is clearly to control a total installation. The Committee recommends that the legislation be amended to refer specifically to a total installation.
- 7.4.5 A further problem with section 108 AE (5)(c) is that it does not define the term "market value" and this presents a problem in interpretation of the Act. The Committee considers that the term "market value" should be defined as "new replacement cost or cost at purchase date whichever is the greater."
- 7.4.6 The Committee considers that the term "adequate facilities" should be specified in the Health (Radiation Safety) Regulations in the form of standards and requirements.
- 7.4.7 The Committee is aware that at present, applicants for items such as Computer Tomography Scanners are technically obliged to provide detailed plans and specifications or even to have equipment in place at the time of application.
- 7.4.8 The Committee believes that it is unreasonable to expect operators to purchase equipment without any guarantee that it will be approved for registration. The Health Commission should be able to give an "approval-in-principle" to operators indicating that the equipment will be registered provided it satisfies the various other regulations under the Act.
- 7.4.9 The Committee considers that when the legislation is amended, provision should be made for an "approval-in-principle" under section 108 AE(5)(c) and that a time limit of twelve months be applied to any "approval-in-principle".

## 7.5 Mechanism for Appeals

7.5.1 The Committee considers that the mechanism for appeal should be similar to that indicated in Section 6.5 above.

### The Committee recommends:

20. That Section 108 AE(5)(c) of the Health (Radiation Safety) Act 1983 which is currently the subject of a sunset clause remain in the Legislation with the following amendments:
  - the threshold be increased to \$200,000 and that it refer to a total radiation apparatus installation;
  - "market value" be defined as " new replacement cost or cost at purchase date whichever is greater".
  - the term "adequate facilities" be specified in the Health (Radiation Safety) Regulations. (7.4.3, 7.4.5 and 7.4.6)
21. That, in the interest of controlling high capital and recurrent costs over radiation apparatus, installation should be defined as including all of the components needed to produce the finished imaging product. (7.4.4)
22. That the Health Commission be empowered to give "approval-in-principle" to applicants indicating that radiation apparatus will be registered provided it satisfies safety and other standards imposed as part of the Regulations. A limit of twelve (12) months should apply to such an "approval-in-principle." (7.4.9)

## CHAPTER 8

### COMMONWEALTH/STATE ACTION

#### 8.1 INTRODUCTION

8.1.1 One of the Committee's terms of reference was to review possible joint State/Commonwealth action. In doing this the Committee covered the areas of health planning, the Medical Benefits Schedule, State liaison and other possible action.

#### 8.2 Health Planning

8.2.1 The Committee believes that all levels of health planning require essentially the same types of health data; however, the levels of data aggregation will vary with the planning level.

8.2.2 It is considered that the Health Commission should initiate measures to provide access to data and expertise between the Commonwealth and all other States in areas where consistent comparisons can be made.

8.2.3 The Committee considers that the possibility of sharing expertise in staff between the Commonwealth and State Departments should also be investigated, for example by exchange programs.

#### 8.3 Medical Benefits Schedule

8.3.1 No conclusive evidence was presented to the Committee indicating that attempts to limit unnecessary servicing generated either by provider or by consumer, and the detection of fraudulent services have been effective as a means of controlling costs. Since medical services attract benefits on the basis of the Medical Benefits Schedule, ways and means should continue to be investigated to control costs through the process of continuing modification of the schedule.

- 8.3.2 The introduction of new technologies and new services is generally followed by an application for their inclusion in the Medical Benefits Schedule.
- 8.3.3 One approach worthy of consideration is that procedures performed on expensive, new technology should not be placed on the Medical Benefits Schedule until they have been "cleared" for distribution by an expert panel. The intention of this method is to restrict the apparatus from distribution until the equipment has been fully tested in a clinical setting, preferably in a public hospital. The National Health Technology Advisory Panel is currently monitoring new medical technologies and developments coming into Australia and making recommendations on items and procedures to be included on the Medical Benefits Schedule.
- 8.4 State Liaison
- 8.4.1 The Committee recommends that the proposed State Health Planning Section should work closely with the National Health Technology Advisory Panel, preparing guidelines for the acquisition of equipment tested in Victorian hospitals.
- 8.4.2 The Planning Section should co-ordinate the activities of a State Health Technology Planning Panel which would work closely with the National Panel, making guidelines and recommendations on the acquisition of equipment tested in Victorian hospitals. Such a State panel would include a broad range of expertise.
- 8.5 Other possible actions
- 8.5.1 The Committee considers that the Commonwealth Government should investigate all possible avenues and measures available to it under Federal powers for cost containment in other areas of high cost medical technology. This would include possible amendments to the Health Insurance Act 1973 to provide that benefits are not payable for certain services unless otherwise directed by the Commonwealth Minister of Health .

The Committee recommends:

COMMONWEALTH/STATE ACTION

23. That the Health Commission initiate measures to provide mutual access to data and expertise between the Commonwealth and the other Australian States. (8.2.3)
24. That as a priority, the Minister of Health discuss with the Commonwealth and State counterparts ways and means to ensure the avoidance of unwarranted growth of services and containment of high cost technologies through:
- (a) changes to the Medical Benefits Schedule;
  - (b) amendments to the Health Insurance Act 1973; and
  - (c) use of other relevant Federal powers.

Further that the National Health Technology Advisory Panel recommend which new medical technologies should be included in the Benefits Schedule. (8.3, 8.5)

25. That the State Health Technology Planning Panel be appointed as an advisory body to the State Health Planning Section. (8.4.2)
26. That the State Health Planning Section and the State Health Planning Technology Panel work closely with the National Health Technology Advisory Panel in the development of guidelines for the acquisition of new equipment. (8.4.2)

## CHAPTER 9

### FURTHER STRATEGIES FOR COST CONTAINMENT AND INCREASED EFFICIENCY AND EFFECTIVENESS

#### 9.1 Changes to funding mechanisms

9.1.1 The Committee recommends that management incentives should be embodied in the hospital budgetary system in the following manner:

- (a) public hospitals set budgets on programs related to the objectives and operations of the hospital on a prospective basis;
- (b) that the budgetary process should be designed to encourage management in hospitals to search for cost cutting techniques and increased efficiency methods without reducing the quality of the service provided;
- (c) that no hospitals and institutions be penalised in the following financial year for savings that it had been able to make in the previous year as a result of increased efficiency.

9.1.2 The Committee considers that the Health Commission's Hospital Management Information System will encourage hospitals to match more correctly their revenues and expenditures for a specified time period by using accrual accounting methods and other techniques. Asset Registers of plant and equipment must be established to enable depreciation to be calculated. This is an important tool for inter-hospital comparisons providing as it does, an accurate reflection of expenditure on capital equipment.

9.1.3 The Committee considers that in areas of diagnosis in the public sector, for example radiology and pathology, it would be far better for the costs of such services to be charged against the person or agency who refers them, thus ensuring better accountability and the proper allocation of costs.

9.1.4 The Committee recommends that individual cost centres should be established within hospitals to enable capital investments and equipment decisions to be based on the performance of individual cost centres in hospital departments.

- 9.1.5 The Committee recommends that the findings of this report in relation to the funding mechanisms of the health care system should be referred to the Economic and Budget Review Committee.
- 9.1.6 The Committee believes that it would seem desirable to provide better advice to the future operators of diagnostic apparatus about the indications for various procedures and that this should be a responsibility of the Health Commission of Victoria.

**The Committee recommends**

27. That management incentives should be embodied in the hospital budgetary system in the following manner:
- (a) public hospitals set budgets on programs related to the objectives and operations of the hospital on a prospective basis;
  - (b) that the budgetary process should be designed to encourage management in hospitals to search for cost cutting techniques and increased efficiency methods without reducing the quality of the service provided;
  - (c) that no hospitals and institutions be penalised in the following financial year for savings that it had been able to make in the previous year as a result of increased efficiency. (9.1.1)
28. That the Health Commission's Hospital Management Information System will encourage hospitals to match more correctly their revenues and expenditures for a specified time period by using accrual accounting methods and other techniques. Asset Registers of plant and equipment must be established to enable depreciation to be calculated. This is an important tool for inter-hospital comparisons providing as it does, a reflection of expenditure on capital equipment. (9.1.2)
29. That in areas of diagnosis in the public sector, for example radiology and pathology, it would be far better for the costs of such services to be charged against the person or agency who refers them, thus ensuring better accountability and the proper allocation of costs. (9.1.3)
30. That individual cost centres should be established within hospitals to enable capital investments and equipment decisions to be based on the performance of individual cost centres in hospital departments. (9.1.4)

31. That the findings of this report in relation to the funding mechanisms of the health care system should be referred to the Economic and Budget Review Committee. (9.1.5)
  
32. That it would seem desirable to provide better advice to the future operators of diagnostic apparatus about the indications for various procedures and that this should be as a responsibility of the Health Commission of Victoria. (9.1.6)

Committee Room,  
22 October 1984

## APPENDIX 1

### RECEIPT OF SUBMISSIONS

1. Government Departments, Authorities, Agencies,

Capital Territory Health Commission  
Department of Hospital and Allied Services -  
Western Australia  
Department of Veterans' Affairs  
Director General of Health Services - Tasmania  
Health Commission of New South Wales  
Health Commission of Victoria \*

2. Hospitals

Alfred Hospital \*  
Ballarat Base Hospital \*  
Freemasons Hospital  
The Royal Melbourne Hospital  
The Royal Women's Hospital \*

3. Other Institutions, Associations and Organisations

Ambulance Service - Melbourne  
Australian Association of Surgeons - Victoria Committee \*  
Australian Dental Association - Victorian Branch \*  
Australian Hospital Association  
Australian Medical Association \*  
Australian Physiotherapy Association \*  
Australian Society for Ultrasound in Medicine  
Doctors' Reform Society of Victoria \*  
Health Benefits Council of Victoria \*  
Private Hospitals Association of Victoria \*  
The Royal Australian College of Medical Administrators  
The Royal Australian College of Ophthalmologists \*  
The Royal Australian College of Radiologists - Victorian Branch \*  
The Victorian Hospitals' Association Limited \*  
The Royal Australian College of Surgeons.

\* provided verbal evidence

4. Individuals

Mr. K.J. Davison, East Brighton  
Dr. D. Legge, Melbourne \*  
Professor L. J. Opit, Prahran \*

5. Overseas

Canada

Department of Health, Manitoba  
Department of Health, New Brunswick  
Department of Health, Newfoundland  
Department of Health, Ontario  
Department of Health, Saskatchewan  
Health Promotion and Information, Ontario  
Hospital and Medical Care, Alberta

United States of America

Alpha Centre

American Hospitals Association  
Department of Health Environment and Control, South Carolina  
Department of Health and Environment, Kansas  
Department of Health and Rehabilitation Services, Florida  
Department of Health and Social Services, Delaware  
Department of Health and Social Services, Wyoming  
Department of Health Services, California  
Department of Health, Colorado  
Department of Health, Iowa  
Department of Health, Minnesota  
Department of Health, Mississippi  
Department of Health, Nebraska  
Department of Health, New Jersey  
Department of Health, New York  
Department of Health, South Dakota  
Department of Health, Rhode Island  
Department of Health, Texas  
Department of Health, Utah  
Department of Health, Virginia  
Department of Health, West Virginia  
Department of Human Resources, Kentucky  
Department of Human Resources, Nevada  
Department of Human Resources, Oregon  
Department of Licencing, Washington  
Department of Public Health, Illinois  
Department of Public Health, Massachusetts  
Department of Public Health, Michigan  
Office of Public Health, New York  
Office of the Minister, Department of Health, Newfoundland

6. Other Countries

Der Sebatir fur Gesund heit, Soziates und familie und der  
Urania-Berlin-Federal Republic of Germany

National Board of Health, Helsinki - Finland



SOCIAL DEVELOPMENT COMMITTEE

Final Report

on

Road Safety

in

Victoria

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ordered to be printed

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D-No.47/1982-84



EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS OF  
THE LEGISLATIVE COUNCIL

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Friday, 2 July 1982

34. JOINT INVESTIGATORY COMMITTEES - The Honourable W.A. Landeryou moved, by leave, That, contingent upon the enactment coming into operation, this Session, of legislation to establish Joint Investigatory Committees:

\* \* \* \* \*

- (e) The Honourables H.G. Baylor, J.L. Dixon, C.J. Hogg, J.E. Kirner and K.I.M. Wright be members of the Social Development Committee.

Question - put and resolved in the affirmative.

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Tuesday, 31 May 1983

24. SOCIAL DEVELOPMENT COMMITTEE - The Honourable Evan Walker moved, by leave, That the Honourable K.I.M. Wright be discharged from attendance upon the Social Development Committee.

Question - put and resolved in the affirmative.

Ordered - That a Message be sent to the Assembly acquainting them of the foregoing resolution and that a vacancy accordingly exists in the membership of that Committee.

EXTRACTED FROM THE VOTES AND PROCEEDINGS OF  
THE LEGISLATIVE ASSEMBLY

---

Thursday, 1 July 1982

36. COMMITTEE APPOINTMENTS - Motion made, by leave and question - That, contingent upon the coming into operation of the Parliamentary Committees (Joint Investigatory Committees) Act 1982 -

\* \* \* \* \*

(e) Mr. Ernst, Mr. Jona, Mr. Newton, Mr. Saltmarsh, Mr. Shell, Mr. Wallace and Mr. Williams be appointed members of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

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Wednesday, 1 June 1983

23. MESSAGE FROM THE LEGISLATIVE COUNCIL - acquainting the Assembly that they have agreed to a resolution discharging the Honourable K.I.M. Wright from attendance upon the Social Development Committee and notifying that a vacancy accordingly exists in the membership of that Committee.

\* \* \* \* \*

25. SOCIAL DEVELOPMENT COMMITTEE - Motion made, by leave and question - That Mr. Steggall be appointed a member of the Social Development Committee -  
(Mr. Fordham) - put and agreed to.

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# R E P O R T

The SOCIAL DEVELOPMENT COMMITTEE, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:-

## 1. FUNCTIONS OF COMMITTEE

The functions of the Committee<sup>1</sup> are to inquire into, consider and report to the Parliament on:-

- (a) any proposal, matter or thing concerned with the social development of the people of the State;
- (b) how the life of individuals, families and communities in the State may be improved; and
- (c) the role of Government in promoting the welfare of the people of the State.

## 2. TERMS OF REFERENCE

The Social Development Committee received a reference from the Governor in Council dated 6 October 1982 to inquire into, report and make recommendations upon the question of road safety in Victoria, and in particular -

- (a) to specify the accident countermeasures which, in the opinion of the Committee, have been proved to reduce accidents and their consequences;

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1. Parliamentary Committees Act 1968, Section 4E.

- (b) to specify the accident countermeasures so proved which are not at present being used in Victoria and which in the opinion of the Committee should be introduced into Victoria;
- (c) to consider whether there are any countermeasures not being used in Victoria which the Committee believes would be likely to achieve a worthwhile reduction in accidents;
- (d) to report on the research which the Committee believes should be undertaken by the State -
  - (i) to obtain more knowledge of accidents; and
  - (ii) to assess the value of present or proposed accident countermeasures;
- (e) to report on any other matters which appear relevant to the inquiry, including -
  - (i) Collisions with Utility Poles and Roadside Fixtures;
  - (ii) The Effects of Drugs on Driving;
  - (iii) Head and Facial Injuries in Road Accidents;
  - (iv) Driver Education;
  - (v) Alcohol and Road Safety; and
  - (vi) The 1981 Road Toll,

3.

BACKGROUND

3.1

INFORMATION RECEIVED BY THE COMMITTEE

This inquiry incorporated uncompleted inquiries of the former Parliamentary Road Safety Committee. It received 415 written submissions from Government Departments, organisations and individuals and heard 39 witnesses<sup>2</sup> resulting in over 600 pages of evidence. All submissions made to the inquiries of the former Road Safety Committee and to the current inquiry have been utilized in the deliberations of the Social Development Committee.

3.2

PREVIOUS REPORTS

(1) Interim Report

An Interim Report presented in Parliament on 29 November 1983 (D-No.17/1982-83) provided an overview of road trauma trends and countermeasures since 1960. It was concerned with the following sections of the terms of reference:

- (a) to specify the accident countermeasures which, in the opinion of the Committee, have been proved to reduce accidents and their consequences;

-----  
(e) (vi) the 1981 Road Toll.

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2. Includes evidence heard in private

The Interim Report revealed that the number of fatalities increased during the 1960's, peaked in 1970 and since then has decreased. In comparison with New South Wales, a consistently lower fatality rate has been maintained in Victoria since 1973.

The decrease in fatalities since 1970 appears to have been primarily due to an increase in vehicle occupant safety. While many factors have contributed to this improvement, some countermeasures which appear to have been responsible for the major reductions in road trauma were:

- regulations concerning the fitting and wearing of seat belts;
- the reduced absolute speed limit;
- drink/driving countermeasures such as random breath testing, increased penalties and publicity.

The Interim Report also highlighted the difficulty of evaluating the direct impact of any single countermeasure on the reduction in road trauma. This becomes increasingly difficult given the number and variety of initiatives introduced over the last 20 years. There is an absence of evaluation of important initiatives such as

traffic safety education in schools, drink/driver rehabilitation programmes, random breath-testing in country areas, radar speed detectors, improvements to hospital casualty facilities, emergency rescue services and intense media campaigns.

(2) First Report

A First Report was presented in Parliament on 3rd May, 1984 (D-No. 27/1982-84). This Report presented the views and findings of the consultants and their recommendations concerning new cost-beneficial countermeasures which could reduce road trauma in Victoria. In addition they reported on research needed and institutional improvements.

The First Report did not indicate the Committee's views on any of the consultants' recommendations. It was made available to the public to assist discussion and to inform debate on the issue of road safety. Furthermore, it was published in accordance with the Committee's policy of making available as much as possible of the evidence upon which it based its deliberations. Because of the wide ranging social and economic implications of many of the recommendations, the Committee required additional time for further consideration before preparing its Final Report.

Following publication of the First Report, the Committee received comments on it from a number of

interested parties. These comments have been taken into account in preparing this Final Report.

### 3.3 BACKGROUND TO THE FINAL REPORT

Road safety is clearly an issue of great community concern, and road trauma represents an enormous cost to the community both in terms of loss of life and suffering, and also in substantial economic costs.

In economic terms, the Committee estimated in its Interim Report that the annual material cost to Victoria is at least \$500 million. The human cost cannot be measured in financial terms, but the gravity of the issue is indicated by the following table.

TABLE 1: ROAD FATALITIES AND INJURIES, 1980-83

<u>Year</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
FATALITIES	664	771	708	662
INJURIES	20,220	20,762	20,684	20,547

Source: Victoria Police

Until 19 October, 1984, there were 512 fatalities, a figure which compares with a total of 538 fatalities for the same period in 1983. The number of fatalities for all types of road users has decreased, except for an increase of three deaths to vehicle passengers.

ACHIEVABLE REDUCTIONS IN ROAD TRAUMA

The Committee is of the opinion that there is no reason why the road toll cannot be further reduced, although the decrease is unlikely to be as dramatic as that of the last decade. However, it is fully aware of the need for balance in its recommendations between the need to address its recommendations towards those statistically at high risk, and the need to avoid unwarranted incursions into the liberties and rights of specific classes and categories of road users.

Victoria's road toll has progressively reduced since 1970 and during 1983 the fatality rate was 2.9 deaths per 10,000 vehicles registered, the same figure as applied in the U.S.A. during 1981 (the most recent year for which data are available). The Victorian rate is less than that for the rest of Australia, and less than recent fatality rates for the U.K., Canada and New Zealand.<sup>3</sup>

Taking distance travelled into account, the Victorian fatality rate per 100 million vehicle kilometres travelled was 2.2 during 1982, compared with a rate of 2.0 in the U.S.A. during 1981. The American rate has decreased relatively little since 1975 and appears to be stabilizing at a figure no less than 1.7 deaths per

---

3. Office of Road Safety, Canberra "Summary of National Road Crash Statistics, August 1984".

100 million vehicle kilometres.<sup>4</sup> However, American governments have steadfastly resisted introducing compulsory seat belt wearing laws. The absence of this important road trauma countermeasure has apparently been off-set by their extensive freeway system.

The U.K. government is aiming to reduce the national road toll by between one-sixth to one-third over the next decade, after taking increases in traffic flow and population into account, by the application and further<sup>5</sup> development of established safety measures.

Based on its consideration of the international trends, the Committee believes that a reduction of the Victorian fatality rate (per 10,000 vehicles registered) by at least 25 per cent over the next five years is an achievable target without resorting to road trauma countermeasures which would be considered unacceptable by the people of Victoria.

However, this target should be viewed against the background of an approximately 5 per cent per annum increase in vehicles registered and 4 per cent per

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4. Dr. B.J. Campbell, Director, Highway Safety Research Centre, North Carolina, U.S.A.
  5. Ms. B.E. Sabey, Head, Road Safety Division, Transport and Road Research Laboratory, U.K. "A UK View on Road Safety".

annum increase in road travel in Victoria since 1970.<sup>6</sup>  
If these trends continue during the next five years, the total number of road deaths per year may be relatively static, even if the objective of reducing the fatality rate by at least 25 per cent were achieved.

To produce further reductions in total road trauma, the Committee believes that consideration may eventually need to be given to implementing countermeasures which are currently considered unacceptable.

### 3.5 ACCEPTABILITY OF COUNTERMEASURES

The Committee does not believe that certain countermeasures recommended by the consultants as cost-beneficial would be acceptable to the people of Victoria in the current climate.

The consultants were required to make a technical assessment of the cost-benefits of countermeasures proposed to the Committee, having regard to the road safety benefits and the quantifiable costs. The consultants were not required to assess the social and political implications of each proposal.

The Committee believes that some countermeasures recommended by the consultants would have substantial social costs. These social costs are of sufficient magnitude to cause these countermeasures to be rejected in the current climate of public opinion. In other words, in the Committee's opinion if the social costs could somehow be added to the quantifiable costs, the countermeasure would no longer be cost-beneficial.

In judging the social acceptability of each recommended countermeasure, the Committee assessed the social costs on a number of dimensions. These were:

- discrimination against clearly identifiable groups or minorities in the population;
- loss of civil rights of society in general;
- loss of individuality of members of society, for example, through treatment of people as groups rather than as individuals;
- restraints on personal mobility, particularly with regard to whether the mobility is transferrable to another time or occasion (for example, driving after drinking), or is non-transferrable (for example, night driving if a curfew were to be imposed on novice drivers);

- costs to the Victorian economy (in addition to the quantifiable costs directly attributable to the countermeasure).

The Committee recognises that assessing these social costs is a difficult task with little objective data to assist the process. Accordingly, the Committee has recommended that research be carried out to measure objectively the acceptability and social costs of road trauma countermeasures, especially those newly introduced as a result of this Final Report and those which the Committee considers are not currently socially acceptable (see Section 6).

In the interim, the Committee recommends that the 24 countermeasures listed in Section 4 should be immediately embodied or accelerated in the Government's road safety programme. The Committee believes that each of these countermeasures would be readily acceptable to the people of Victoria.

### 3.6 IMPLEMENTATION PROGRAMME

The Committee proposes that the 24 countermeasures be implemented over the next five years in the order of priority indicated in Section 4. In addition, trends in road trauma should be continuously monitored over the period. The aim should be to reduce the fatality rate per 10,000 vehicles registered by at least 25 per cent over the period and to prevent total road trauma

per annum from increasing (desirably it should be reduced as well). If this aim is achieved, the Committee believes that the injury rate would also be reduced by a commensurate amount.

If during the period it is apparent that these objectives will not be met, the Committee believes that consideration should be given to implementing a further 10 countermeasures which are considered not socially acceptable currently. These countermeasures are listed in Section 5.

The Committee recognises that the social acceptability of road trauma countermeasures is fluid and may change dramatically over the next five years. This may be especially the case if total road trauma per annum is seen to increase, at which time certain currently unpalatable measures may have become socially acceptable.

### 3.7 FURTHER REFERENCE

The Committee proposes that it be given a further reference to monitor trends in road trauma and the implementation of countermeasures over the period 1985 to 1989, with a view to reporting to Parliament on:

- (a) the effects on road trauma of countermeasures implemented as a result of the Committee's Final Report,
- (b) any additional countermeasures which should be implemented.

The reference should require the Committee to report to Parliament before the end of 1990, or at an earlier time if the road trauma situation in Victoria appears to be deteriorating.

## 4. COUNTERMEASURES CONSIDERED SOCIALLY ACCEPTABLE

### 4.1 INTRODUCTION

Twenty four countermeasures identified by the Committee or recommended by the consultants as cost-beneficial were considered to be immediately acceptable to the people of Victoria.

These countermeasures are listed in this section in order of priority of their implementation. Many could be implemented simultaneously given the existing level of resources for road safety programmes.

High priority countermeasures listed in Paragraph 4.2 are those addressing a substantial proportion of the road trauma problem with high likelihood of success. Countermeasures with a medium level of priority (Paragraph 4.3) or lower are aimed at smaller fractions of the total problem. Medium priority countermeasures include those directed specifically at the road trauma of motorcyclists (11 per cent of the total deaths and injuries), pedestrians (10 per cent) and bicycle riders (5 per cent).

Further details regarding each countermeasure may be found in the Minutes of Evidence to the inquiry or in the Committee's First Report. The appropriate page number is given in brackets.

Enforcement

(1) A substantial increase in the number of operational police officers and appropriate equipment for the Traffic Operations Group of the Victoria Police, to facilitate the following types of operations:

- additional concentrated random breath testing operations at the rate of 20 hours per 100 square kilometres per week, particularly in urban areas (First Report, p.70);
- publicised and visible mobile patrols aimed at drink/driving offenders;
- highly visible random check stops aimed at seat belt offences;
- sporadic but frequent visible police patrols at signalised intersections (First Report, p.39).

Mr. Martin: "...the Chief Commissioner has directed that 10 per cent of the Force strength will be allocated to the Traffic Department and at the moment I have about 9 per cent of the Force."

Mr. Saltmarsh: "My question is if the Commissioner has indicated there should be 10 per cent and you have only 9 per cent, what is the difference between 10 per cent and 9 per cent in numbers."

- (2) Progressive installation of automatic cameras and advance warning signs, to deter traffic light offences at intersections (First Report, p.39).

#### 4.2.2 Novice Drivers

- (3) Introduction of a graduated licensing scheme for car drivers, involving additional driving restrictions during the Probationary Licence phase (specific restrictions to be further researched by the Road Traffic Authority) (First Report, p.32).

- the proposal would have lower priority if the scheme allowed any solo driving below the age of 18.

#### 4.2.3 Drink/driving

- (4) Legislation giving Police the power to require a preliminary breath test from any driver who has committed a moving traffic offence (First Report, p.84).

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7. Minutes of Evidence, p.146. Assistant Commissioner  
(Traffic), Victoria Police

(5) Requirement that a person who challenges the accuracy of a breath test, shall be informed that he has the right to have a sample of his blood taken for analysis and that the result of such analysis when completed shall be made available to him and also to the Police and may be used in evidence against him (First Report, p.83).

(6) Implementation of guidelines to assist Magistrates in determining "problem" drinkers, appropriate rehabilitation treatments, and re-licensing procedures (Evidence, p.473 and p.479).

#### 4.2.4 Road Hazards

(7) Increased programmes and funding regarding accident black-spot identification and cost-beneficial treatment (First Report, p.133).

(8) Designation by the Premier of a single authority to be given the overriding responsibility and power to identify and treat roadside hazards effectively (Evidence, p.429).

### 4.3 MEDIUM PRIORITY COUNTERMEASURES

#### 4.3.1 Drivers and Motorcyclists

(9) Roadcraft manuals for Learner Permit and Probationary Licence applicants, plus roadcraft tests for licensing (First Report, p.25).

- (10) Increased publicity in conjunction with Police enforcement, aimed at seat belt offences especially in rear seats (First Report, p.53).
- (11) Visible enforcement of speed limits at locations and times of high accident occurrence (First Report, p.42).
- (12) Increased use of alternative procedure summonses to adjudicate traffic offenders, to minimize court appearances by Police officers (Evidence, p.487).
- (13) A review of the number and range of offences covered by Traffic Infringement Notices, to provide a proper balance between the minimization of court appearances by Police officers on the one hand and the rights of citizens on the other (First Report, p.175).
- (14) Photographs on drivers' licences to improve efficiency of licence withdrawal as a sanction (First Report, p.44).
- (15) Removal of Magistrates' discretion to adjourn serious driving charges against Probationary Licence holders (Evidence, p.486).

#### 4.3.2

##### Motorcyclists

- (16) Expansion of pre-licence motorcycle rider training and skills testing at the time of licensing, to complement the existing programme of training/testing for motorcycle Learner Permit issue (First Report, p.27).
- (17) Publicity aimed at increasing motorcycle conspicuity through the daytime use of headlights or running lights and the wearing of conspicuous clothing (First Report, p.53)

#### 4.3.3

##### Pedestrians

- (18) Greater emphasis on pre-school pedestrian education (First Report, p.15).
- (19) Increased enforcement directed at pedestrians crossing against traffic signals, through the existing provision for issuing Traffic Infringement Notices, particularly in those areas and times identified as having high pedestrian accident risk (First Report, p.103).
- (20) Extension of Traffic Infringement Notice system to include pedestrians crossing within 20 metres of a crossing, plus increased enforcement of this offence, particularly in those areas and times identified as having high pedestrian accident risk (First Report, p.103).

#### 4.3.4 Bicyclists

- (21) Increased publicity aimed at encouraging the use of approved helmets by bicyclists, especially child cyclists (First Report, p.105).
- (22) Accelerated introduction of the Bike-Ed bicycle safety programme in schools (First Report, p.18).
- (23) Increased enforcement of the bicycle lighting regulations, through the existing provision for issuing Traffic Infringement Notices (First Report, p.111).

#### 4.3.5 Vehicles

- (24) High-mounted rear brake lights to be installed on all new cars (First Report, p.128).

#### 4.4 LOWER PRIORITY COUNTERMEASURES

A number of other countermeasures were assessed as cost-beneficial by the consultants and considered by the Committee to be currently acceptable to the people of Victoria. However, these countermeasures were judged to be of lower priority having regard for their individual relatively small effects on total road trauma.

Recognising the limited resources available for implementing road safety programmes, and the already extensive list of countermeasures recommended in previous sections, the Committee believes it would not be appropriate to recommend that any of the lower priority countermeasures be implemented at this time.

4.5

#### POTENTIAL EFFECTS ON ROAD TRAUMA

The Committee has examined the potential reduction in road casualties (deaths plus persons injured) during the next five years if the 24 countermeasures it has recommended are implemented. The research evidence does not allow estimates to be made of the effect on fatalities alone.

Based on the evidence produced by the consultants, the Committee has estimated that the road casualty rate per 10,000 vehicles registered would be reduced by the following percentages:

	<u>Per cent</u> <u>Reduction</u>
ENFORCEMENT PROGRAMME	7-10
NOVICE DRIVER COUNTERMEASURES (without reduction in driver licensing age)	4
DRINK-DRIVING COUNTERMEASURES	4
ROAD HAZARD COUNTERMEASURES	5
DRIVER AND MOTORCYCLIST MEASURES	5
MOTORCYCLING MEASURES	0.75
PEDESTRIAN MEASURES	0.5
BICYCLING MEASURES	1
VEHICLE MEASURE	3
	<hr/>
ESTIMATED TOTAL REDUCTION (rounded)	30-33
	<hr/>

The Committee notes that the estimated total reduction in the road casualty rate is consistent with the aim to reduce the fatality rate per 10,000 vehicles registered by at least 25 per cent during the next five years. Since fatalities are part of the casualty rate, and

since most of the 24 countermeasures are directed primarily at the more serious casualties, the Committee believes that the aim can be achieved if the 24 countermeasures are implemented.

However, the Committee notes with concern that its recommended programme of countermeasures is expected to reduce only a relatively small proportion of the road casualties involving unprotected road users, especially pedestrians and bicycle riders.

The Committee believes that this is due to the absence of basic knowledge of accident patterns of pedestrians and bicycle riders, and the consequent limited number of known cost-beneficial countermeasures of their road trauma. Accordingly, the Committee has recommended that detailed studies of the accident patterns of pedestrians and bicycle riders be carried out (see Section 6).

5. COUNTERMEASURES NOT CURRENTLY SOCIALLY ACCEPTABLE

5.1 INTRODUCTION

The Committee were advised of a number of other countermeasures which would apparently produce a cost-beneficial reduction in road trauma. However, the assessments carried out by the consultants were not able to take into account social costs such as discrimination, losses of civil rights and individuality, restraints on mobility, and costs to the economy.

The Committee considered that new countermeasures with high social costs would not be currently acceptable to the people of Victoria. Such countermeasures should be considered by an appropriate Committee only as a last resort if and when existing and proposed measures are fully implemented and if the level of road trauma is still unacceptably high and warrants further stringent action.

The 10 countermeasures are listed in the following paragraphs, ranked in order of priority having regard to their potential effects on total road trauma.

HIGH PRIORITY COUNTERMEASURES

- (1) Higher minimum age for the purchase of alcoholic beverages (First Report, p.65).
- (2) Ban on television advertising of alcohol products (First Report, p.73).
- (3) Zero blood alcohol limit for drivers and motorcyclists aged 18 and 19 (First Report, p.67).
- (4) Reduced rural speed limits (First Report, p.92).
- (5) Compulsory use of headlights or running lights by motorcyclists during daylight (First Report, p.113).
- (6) Compulsory use of approved helmets by bicyclists (First Report, p.105).

LOWER PRIORITY COUNTERMEASURES

- (7) Extension of existing 260cc limit on motorcycles used by novice motorcyclists, to affirm limit on motorcycle performance (First Report, p.30).
- (8) Compulsory use of protective gloves and protective trousers by motorcyclists (First Report, p.116).

- (9) Legislation giving Police the power to test vehicles and issue notices, especially relating to tyre tread depth, to unroadworthy vehicles which are parked unoccupied (First Report, p.125).
- (10) Ban on the fitting of "bull bars" on urban registered vehicles (Evidence, p.465).

RESEARCH NEEDED

The Committee is aware of various research needs which have prevented the development of new countermeasures and inhibited the Committee in making its recommendations.

The Committee believes that the Government should give urgent attention to research in the following areas in priority order:

- (1) Objective measurement of the acceptability and social costs of road trauma countermeasures, especially those newly introduced as a result of this Final Report and those which the Committee considered not currently socially acceptable;
- (2) Circumstances in which young and inexperienced drivers have high risk and high incidence of road trauma, to assist in the development of a graduated licensing scheme;
- (3) A detailed study of pedestrian accident patterns, including the circumstances of accidents to pedestrians who had been drinking;
- (4) A detailed study of bicycle accident patterns;

- (5) Development of methods of closely monitoring road trauma trends in Victoria, taking into account accidents of all levels of severity involving each type of road user;
- (6) The effects of existing programmes of traffic safety education in schools;
- (7) Behavioural and accident-based evaluations of publicity campaigns focussed on specific problems;
- (8) The effects of random breath testing in country areas, with and without supporting publicity;
- (9) The effects of drugs on accident risks of various categories of road users.
- (10) The effects of on-road bicycle segregation facilities, by implementation and evaluation of a range of devices on a pilot basis;
- (11) Evaluation of the effects on road trauma of any new countermeasures introduced as a result of this Final Report.

The Committee also believes that the key to the development of further countermeasures to road trauma is a continuous and properly-resourced research programme. As Dr. B.J. Campbell, a leading American safety researcher, has stated:

"There is a need for more research into road user behaviour; currently research is barely ahead of operational requirements."<sup>8</sup>

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8. Proceedings, Road Safety Initiatives Conference, Melbourne, 1980, p.27.

SUMMARY OF RECOMMENDATIONS

The Committee recommends that the following actions be taken:

- 7.1 That the Government implement 24 countermeasures in the following areas during the next five years:
- (a) Increased enforcement of the following types:
    - random breath testing
    - drink/driving patrols
    - seat belt checks
    - patrols and automatic cameras at signalised intersections (4.2.1, p.14)
  
  - (b) Graduated licensing for car drivers (4.2.2, p.15)
  
  - (c) Drink/driving countermeasures
    - preliminary breath tests from drivers who commit moving traffic offences
    - blood test to be only justifiable challenge to breathalyser reading
    - guidelines for treating "problem" drinkers (4.2.3, p.15)
  
  - (d) Road hazard countermeasures
    - increased "black-spot" treatment
    - single authority responsible for treating roadside hazards (4.2.4, p.16)

(e) Driver and motorcyclist measures

- roadcraft manuals and tests for licensing
- publicity aimed at seat belt offences
- speed enforcement at accident locations and times
- increased use of alternative procedure summonses
- review of offences covered by Traffic Infringement Notices
- photographs on drivers' licences
- removal of Magistrates' discretion to adjourn serious driving charges against Probationary Licence holders (4.3.1, p.16)

(f) Motorcycling measures

- expanded rider training and testing before licensing
- publicity aimed at increasing conspicuity (4.3.2, p.17)

(g) Pedestrian measures

- pre-school pedestrian education
- increased enforcement aimed at pedestrians crossing against traffic signals or crossing within 20 metres of signals or pedestrian crossings (4.3.3, p.18)

(h) Bicycling measures

- publicity to encourage helmet use
- acceleration of Bike-Ed programme
- increased enforcement of bicycle lighting regulations (4.3.4, p.18)

(i) High-mounted rear brake lights on new cars  
(4.3.5, p.19)

7.2 That trends in road trauma be continuously monitored during the next five years and, if the situation appears to be deteriorating, that re-consideration be given to implementing a further 10 countermeasures which the Committee considers are not currently socially acceptable (5.2, p.23 and 5.3, p.24).

7.3 That the Government should maintain a continuous and properly-resourced road safety research programme and should give urgent attention to research in the following areas:

- acceptability and social costs of road trauma countermeasures
- young and inexperienced driver accidents
- pedestrian accidents
- bicycle accidents
- trends in road trauma
- traffic safety education in schools
- effects of publicity campaigns
- random breath testing in country areas
- drug/road user combinations with high accident risks

- on-road bicycle segregation facilities
- effects of any new countermeasures introduced  
(6., p.25)

7.4 That the Committee be given a further reference to monitor trends in road trauma, assess the effects of new countermeasures, and report on any additional countermeasures which should be implemented (3.7, p.12).

Committee Room,

19 October 1984

F D Atkinson Government Printer Melbourne



STATUTE LAW REVISION COMMITTEE

PROGRESS REPORT

ON THE

CONSTITUTION ACT 1975

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THE ROLE OF UPPER HOUSES OF PARLIAMENT  
(Interim Report)

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*Ordered to be printed*

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D No. 1/1982



STATUTE LAW REVISION COMMITTEE

MEMBERS

Mr Aurel Smith, M.P. (Chairman)  
Mr C. T. Edmunds, M.P. (Deputy-Chairman)  
The Hon. Joan Coxsedg, M.L.C.  
Mr W. T. Ebery, M.P.  
The Hon. D. M. Evans, M.L.C.  
The Hon. J. V. C. Guest, M.L.C.  
Mrs J. T. Patrick, M.P.  
The Hon. N. B. Reid, M.L.C.  
Mr B. A. E. Skeggs, M.P.  
Mr T. C. Trewin, M.P.  
The Hon. J. M. Walton, M.L.C.  
Mr J. T. Wilton, M.P.

Joint Secretaries:

W. R. Tunnecliffe

Mrs E. Chandler

EXTRACTED FROM THE MINUTES OF THE PROCEEDINGS  
OF THE LEGISLATIVE COUNCIL

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TUESDAY 8 SEPTEMBER 1981

- 15 STATUTE LAW REVISION COMMITTEE - The Honourable A. J. Hunt moved, by leave, That the Honourables Joan Coxsedg, D. M. Evans, J. V. C. Guest, N. B. Reid and J. M. Walton be members of the Statute Law Revision Committee, and that the said Committee have power to send for persons, papers and records.

Question - put and resolved in the affirmative.

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EXTRACTED FROM THE VOTES AND PROCEEDINGS OF THE  
LEGISLATIVE ASSEMBLY

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TUESDAY 8 SEPTEMBER 1981

- 19 STATUTE LAW REVISION COMMITTEE - Motion made, by leave, and question - That Mr Ebery, Mr Edmunds, Mrs Patrick, Mr Skeggs, Mr Smith (*South Barwon*), Mr Trewin and Mr Wilton be Members of the Statute Law Revision Committee; and that the Committee have power to send for persons, papers and records (*Mr Thompson*) - put and agreed to.

## REPORT

The STATUTE LAW REVISION COMMITTEE, appointed pursuant to the provisions of the Parliamentary Committees Act 1968, has the honour to report as follows:

### INTRODUCTION

1 This is an Interim Report to the Parliament on that aspect of the Committee's Inquiry into the Constitution Act 1975 relating to the Role of Upper Houses of Parliament, and in particular the Victorian Legislative Council. It was the Committee's intention to present its report on this subject during the 1982 Autumn Sitting. However, with the dissolution of the Legislative Assembly on 24 February 1982, that is now not possible. This Interim Report is therefore designed to advise the Parliament of the progress which has been made in the Inquiry and of some conclusions which have been arrived at by the Committee.

2 The Committee commenced hearing evidence on the Role of Upper Houses on 6 March 1979 and to date 30 persons have appeared before the Committee both in Melbourne and during a visit to Hobart in July 1979, resulting in 641 pages of transcript. Discussions, of which a transcript was not taken, have been held with several persons during visits to Brisbane and Darwin. The Committee has also considered a number of written submissions and letters. A full list of those persons who have assisted the Committee will appear in its final report on the subject.

### THE COMMITTEE'S APPROACH TO THE INQUIRY

3 At the outset of the Inquiry, the Committee decided not to confine itself to an examination of the operation of the Victorian Legislative Council. It decided that a more constructive approach would be to look at the Parliamentary system as a whole in an attempt to highlight any weaknesses and deficiencies which may be apparent. Having established this as a basis, the Committee then considered whether there was a role for the Legislative Council in making the Parliament a more effective body.

4 Several issues emerged during the Inquiry relating to the weaknesses in the Parliamentary system and a proposed role for the Legislative Council. With regard to the Parliamentary system, a common source of concern to all

witnesses and to the Committee was the increasing power of the Executive government. The Committee readily agrees that because of the rapidly growing power of the Executive there is a need for Parliament to strengthen its review of Executive activity. The discipline of the party system exercised to the extent that it is in Australia is also seen by the Committee to be a problem hampering the effectiveness of Parliament as an institution.

5 In the case of the Legislative Council, obviously the initial question to be resolved was whether it should be retained. The remaining issues relating to any proposed role for the Legislative Council are dependent upon that question being resolved in the affirmative and the Committee proceeded with the Inquiry on the assumption that, at least for the time being, there would be an Upper House in Victoria. Such proposed role for the Legislative Council could be largely determined by the following issues:

- (a) should a Standing Committee system be established in the Legislative Council and would it require guaranteed Constitutional support for its funding?
- (b) should the Legislative Council contain Ministers and retain the powers to initiate legislation?
- (c) should any change be made to the Legislative Council's powers to reject or amend Bills?
- (d) should the Legislative Council retain the power to reject Appropriation or Supply Bills?
- (e) are the present provisions relating to disagreements between the Houses satisfactory; if not, what changes are desirable?
- (f) what system of election should be employed for Members of the Legislative Council?

6 It is not proposed in this Report to detail the arguments made in relation to those issues which have arisen during the Inquiry but merely indicate some views which the Committee has formulated on those issues. The Committee realizes that the comments made in this Report are not binding upon its successor but it would expect such new Committee to review all aspects of the Inquiry as a matter of priority with a view to making a final report to the Parliament sometime during 1982.

## CONTROLLING THE EXECUTIVE: A MAJOR REASON FOR RETAINING THE LEGISLATIVE COUNCIL

7 The Committee sees this level of Executive government power as the main threat to Parliamentary supremacy. In the Committee's view there are three main ingredients of the problem. Firstly, there is the vast growth in the number of public servants, and in the public sector generally and the lack of adequate controls on public service decision-making. Secondly, there is the ever increasing growth of subordinate legislation and the need for their scrutiny on far wider principles than the Subordinate Legislation Committee is presently permitted to do. Thirdly, there is the lack of accountability in the spending of public moneys.

8 The Committee considers that Parliament must act swiftly to take action to overcome this problem. In view of the main task of Parliament to act in the best interests of the people and the many criticisms of Upper Houses, the Committee considered the effectiveness of bicameral as opposed to unicameral Parliaments. By a majority decision it concluded that the better way of providing for Executive government control is by retaining the bicameral system in Victoria but with an Upper House with significant reforms. The Committee agrees with many of the criticisms of the Legislative Council but views those arguments as supporting the reform of that House, rather than providing grounds for its abolition.

9 In the Committee's view, the principal reform to be effected should be the establishment of a Standing Committee system similar to that which operates in the Senate. Such Committees would have as their prime function the examination of legislation, regulations, annual reports, departmental estimates and monitoring the administration of Government policy. The Committee feels that the establishment of a Standing Committee system, with a guarantee of adequate resources to support its work, is the best way of providing for an effective review of Executive decisions and will ensure a distinctive role for the Legislative Council which is now lacking.

## CONCLUSIONS ON THE OTHER ISSUES

10 Having concluded by a majority decision that it is desirable that the Legislative Council be retained, the Committee then examined other aspects relating to its proposed role. Witnesses were divided on the most important questions of whether the Legislative Council

should contain Ministers and whether it should have the power to initiate legislation. The Committee is firmly of the view that the Legislative Council retain its power to initiate legislation other than money Bills although some Members were of the opinion that the power should be confined to the initiation of private Members Bills. On the question of removing all Ministers the Committee was evenly divided but it concluded by a majority decision that a reduction in the number of Ministers would facilitate the performance of the Legislative Council in its new role.

11 The Committee considered the many calls for curtailment of the Legislative Council's powers in relation to Bills, including its power to reject Supply and Appropriation Bills. It does not favour any reduction of the Legislative Council's powers in this respect although it does consider the present provisions relating to disagreements between the Houses to be unsatisfactory. The Committee therefore takes the view that, as a consequence of the rejection of a Supply or Appropriation Bill by the Legislative Council, there should be an automatic double dissolution of both Houses of Parliament, unlike the present situation whereby, as a first step in resolving the disagreement, the Legislative Assembly only is dissolved. In relation to other Bills which are the subject of disagreements, the Committee favours a simplification of the present deadlock procedure without providing for an automatic double dissolution.

12 The question of electoral systems together with tenure of office of Legislative Council Members and the desirability of conjoint elections is a most complex matter upon which the Committee would need considerable time for further study. Many suggestions have been put to the Committee that proportional representation should be the method used to elect Members to the Legislative Council, but at this stage the Committee has reached no conclusion on this or on the question of conjoint elections.

Committee Room  
23 February 1982

6/87



VICTORIA

MINUTES  
OF THE  
PROCEEDINGS  
OF THE  
LEGISLATIVE  
COUNCIL

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