



# **BUSHFIRE PREVENTION AND ELECTRICITY DISTRIBUTION**

**THE REPORT  
OF  
THE WORKING PARTY ON THE REVIEW OF  
ELECTRICITY DISTRIBUTION POLICIES IN  
BUSHFIRE PRONE AND ENVIRONMENTALLY  
SENSITIVE AREAS**

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WORKING PARTY TO REVIEW ELECTRICITY  
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AND ENVIRONMENTALLY SENSITIVE AREAS

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9 April 1985  
MME 5/84

The Hon R G Payne  
The Minister of Mines and Energy  
South Australian Government  
State Administration Centre  
Victoria Square  
ADELAIDE 5000

Dear Minister

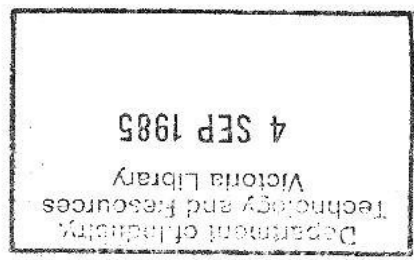
BUSHFIRE PREVENTION AND ELECTRICITY DISTRIBUTION

I forward herewith the Final Report of the Working Party on the Review of Electricity Distribution Policies in Bushfire Prone and Environmentally Sensitive Areas.

As a result of the expanded Terms of Reference, the report makes recommendations for organisational and legislative arrangements considered necessary for effective planning and co-ordination of all aspects of bushfire prevention and protection in South Australia. These proposals are designed to complement existing and developing arrangements for environmental and land use planning, the management of fire services and disaster contingency planning.

The Report then reviews electricity distribution policies in bushfire prone and environmentally sensitive areas within the wider context of bushfire hazard reduction.

The recommendations of the report have significant ramifications for the Government, Local Government, Government agencies and many South Australians. The Working Party is of the view that this justifies the initiation of comprehensive consultation before the Government takes action on the various aspects of the report.



Public consultation processes inevitably take time and every effort should be made in the interim to make progress on upgrading bushfire prevention measures in this State. This is particularly important considering that, while the impact of the Ash Wednesday 1983 bushfires event will always be very real to those who suffered its fury, general public concern has not unnaturally diminished over the intervening two years.

The Working Party has therefore made specific recommendations on action which could be taken immediately without compromising longer term Government decisions on other recommendations of the report.

This report represents the efforts of all members of the Working Party. Their contributions are acknowledged with particular mention of Mr P J Manoel, the Executive Officer, for his work in compiling the final report.

Yours faithfully

A handwritten signature in cursive script, appearing to read 'K W Lewis'.

(K W Lewis)

CHAIRMAN

WORKING PARTY TO REVIEW ELECTRICITY

DISTRIBUTION POLICIES IN BUSHFIRE PRONE AND  
ENVIRONMENTALLY SENSITIVE AREAS

BUSHFIRE PREVENTION

and

ELECTRICITY DISTRIBUTION

Report of the:

Working Party on the Review of Electricity Distribution Policies in Bushfire Prone and Environmentally Sensitive Areas.

April 1985.

In so far as this report carries recommendations or proposals for future action, it must not be assumed from this report alone that they form part of any approved policy.



## TERMS OF REFERENCE

### WORKING PARTY ON THE REVIEW OF ELECTRICITY DISTRIBUTION POLICIES

#### IN BUSHFIRE PRONE AND ENVIRONMENTALLY SENSITIVE AREAS

To consider the recommendations of the Review of Electricity Distribution policies in Bushfire Prone and Environmentally Sensitive Areas and public comment on it, to advise on implementation of those aspects which have broad implications for Government, and to ensure co-ordination of any action between the relevant authorities and departments.

The Working Party will report on the following matters:

1. Define and establish an appropriate process for determining environmentally sensitive and bushfire prone areas.
2. The general philosophy of who should be responsible for line clearing and ground fuel removal and who should carry out line clearing.
3. Strategies for reducing bushfire risks associated with powerlines, including planning considerations and setting priorities for undergrounding, giving consideration to ETSA's capacity to underground and the value of undergrounding.
4. Line clearance requirements, tree cutting standards and public accountability for the line clearance program.
5. Responsibility for costs and the means of cost recovery for the line clearing and undergrounding program.
6. Appropriate organisational structures and necessary legislative support.

\* In developing its proposals for organisational structures, the Working Party should take into account the broad requirements of bushfire mitigation planning and management.

The Working Party will present an interim report within six weeks setting out a timetable for its work and recommending any interim measures which are identified as advisable.

The Working Party will report to the Resources and Physical Development Committee through the Minister of Mines and Energy.

\* Addition to original Terms of Reference.





WORKING PARTY TO REVIEW ELECTRICITY DISTRIBUTION  
POLICIES IN BUSHFIRE PRONE AND ENVIRONMENTALLY SENSITIVE AREAS

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## 1. INTRODUCTION

### 1.1 THE SCOPE OF THIS REPORT

Following the disastrous Ash Wednesday 1983 Bushfires, the Electricity Trust of South Australia (ETSA) commissioned W D Scott and Company Pty Ltd to review "Electricity Distribution Policies in Bushfire Prone and Environmentally Sensitive Areas". The W D Scott report which was released on 30 August 1984 contained recommendations not only for action by ETSA but also by the Government.

It was that report which formed the initial agenda for this Working Party which was established by the Honourable R G Payne, Minister of Mines and Energy, on 20 October 1984.

At the same time, the Honourable J D Wright, Minister of Emergency Services foreshadowed a proposal for a "Bushfire Authority" in his second reading speech in respect of a Bill for an Act to amend the Country Fires Act, 1976.

It was subsequently agreed that the original terms of reference of the Working Party be widened to enable it to take into account the broad requirements of planning and management of bushfire prevention in developing proposals for organisational structures. This decision meant that the Working Party's responsibilities were extended considerably beyond the direct issues associated with electricity distribution into the area of organisational and other requirements for successful bushfire prevention.

The general approach of the Working Party has therefore been:

- \* to examine the bushfire problem and identify opportunities for reducing bushfire hazard (Section 3).
- \* to propose an appropriate organisational structure for bushfire prevention (Section 4).
- \* to address the specific issues related to electricity

## 2.

distribution in bushfire prone and environmentally sensitive areas (Section 5).

- \* to consider the level and source of funding of the various proposals (Section 6).
- \* to identify a program of enabling legislation (Section 7).
- \* to propose a timetable for implementation of the proposals (Section 8).

This approach is reflected in the presentation of the Report and the sequence in which the recommendations are made.

It needs to be emphasised that the Working Party has not assumed authority to arbitrate the relative merits of alternative techniques of bushfire prevention and protection or of electricity distribution. Considerable enquiry has, nevertheless, been undertaken in these areas to ensure that the recommended organisational structures, management policies and procedures are supportive of those techniques which have either been independently justified or which appear likely to be justified through an ongoing process of technical and consultative evaluation.

### 1.2 BACKGROUND

#### 1.2.1 The W D Scott Report

The key recommendations of the W D Scott Report included:

- \* the need for the official declaration of high bushfire danger zones to enable specific bushfire prevention measures to be required to be adopted in such areas.
- \* ETSA should continue to have responsibility for maintaining adequate clearance of powerlines. However, there needs to be clarification of the ETSA's powers and independent approval and public declaration of line clearance standards.

### 3.

- \* ETSA should contribute 50% of the cost of placing existing overhead distribution lines underground in certain areas where there is:
  - a high risk of starting a major bushfire
  - a high probability that major damage would result from such a bushfire
  - a requirement for frequent tree cutting to maintain line clearance
  - general acceptance that the area is environmentally sensitive.

The above criteria apply to 'bad country' as described in the Scott Report.

- \* in circumstances as described above all new extensions to the distribution system should be required to be placed underground. In general new service lines, lines in new subdivisions and rural property connections in high bushfire hazard areas should be required to be placed underground.
- \* the bushfire risk reduction practices of ETSA should be part of a co-ordinated approach to bushfire prevention and there should be more effective co-ordination and control mechanisms put in place at the State Government level.

The Working Party is in agreement with the broad thrust of these recommendations.

Since the release of the Report a number of public meetings have been held throughout the State. In addition ETSA invited local government and other organisations and individuals with an interest in the issues to provide the consultants with their reactions to the report.

Some issues relating to costing and funding of placing existing mains underground have been challenged by particular lobby groups and local government has indicated that it does not believe it should be required to fund large scale projects for placing existing lines

underground. These two points aside, it would seem that there has been widespread acceptance of the Report by both ETSA and the community in bushfire prone areas.

The Working Party also noted that a survey of some 200 Belair residents indicated a willingness to contribute to the cost of placing existing electricity distribution mains underground in certain areas.

While the W D Scott Report has been used as a basic reference document, the Working Party has drawn on a great deal of valuable information contained in other published and unpublished reports as well as the expertise of individuals not available on the Working Party.

#### 1.2.2 Action by ETSA

A comprehensive summary of recent action taken by ETSA to reduce further the risk of fire starts is attached in Appendix I

Some of the main activities are:

- \* substantial increases in line clearing as indicated by expenditure of \$2.6 million in 1982/83; \$6.7 million in 1983/84; and a budgetted \$8.5 million in 1984/85.
- \* the fitting of 176 000 spacers to low voltage lines in bushfire prone areas to minimise 'clashing' in high winds.
- \* upgrading of line clearance standards following evaluation of overseas and interstate practice and consultation with the Department of Environment and Planning.
- \* improved supervision and training of work crews (including contractors) engaged in line clearance.
- \* initiation of the W D Scott Report on a 'Review of Electricity Distribution Policies in Bushfire Prone and Environmentally

Sensitive Areas" and acceptance of the broad thrusts of the Report.

This includes an announcement by ETSA that it will contribute to the cost of undergrounding appropriate existing overhead mains in very high risk areas.

- \* the active promotion of underground extension of new powerlines and service connections in high fire risk areas.
  
- \* active support for and participation in the community based Fire Information and Reduction Exercise ('FIRE') in the Mitcham Hills - Belair District.

The Working Party considers that ETSA has taken a responsible, positive and increasingly sensitive approach in its efforts to minimise serious bushfire risk associated with electricity distribution. It is constrained, however, by the lack of external support and review including independently determined criteria, guidelines and, in some aspects, legislative support.

It is unfortunate, too, that ETSA has suffered localised but highly publicised criticism as a result of the natural conflict between community perceived aesthetic and environmental objectives and reasonable bushfire risk reduction measures. That is not to say, of course, that if the need to act had not been so urgent and the appropriate consultative and decision-making processes had been in place, ETSA would have always been found to be correct in its past actions.

It is believed that the recommendations of the Working Party will alleviate these conflicts.

### 1.2.3 The Interim Report

The Interim Report of the Working Party was released by the Minister of Mines and Energy on 18 December 1984.

## 6.

The principal recommendations of that report were that:

- \* ETSA be responsible for the line clearance program and should carry out the program itself.
- \* the Government adopt the present ETSA line clearance criteria and make them available to Local Government, fire fighting authorities, interested parties and the public.
- \* ETSA should be responsible for the initial setting of priorities for undergrounding of existing powerlines for review by appropriate consultative processes involving Local Government, fire fighting authorities, interested parties, and the public.
- \* ETSA should continue with its work on the identification of potential undergrounding projects for subsequent consideration of priorities as above.
- \* ETSA should immediately apply a policy of placing all new powerlines underground in those high bushfire hazard areas described as 'bad country' in the W D Scott Report.

The interim report was distributed to any party expressing interest and as a vehicle for inviting comment on the task of the Working Party.

### 1.2.4 Special Study Team

To expedite the Working Party's deliberations, approval was given by the Minister of Mines and Energy to retain W D Scott and Co Pty Ltd, to lead a team to investigate and propose options for a South Australian "Bushfire Authority".

This study included comprehensive evaluation of relevant organisations in Western Australia, Victoria and New South Wales. Key stakeholders and other interested individuals in South Australia were also interviewed.

The findings and recommendations of the Working Party on "organisational structure" as documented in this report owe much to this study.

#### 1.2.5 Submissions, Consultation and Representations

In addition to the interview program arranged by W D Scott, the Working Party received a range of views from community groups and organisations. A full acknowledgement of these is presented in Appendix II. Some of these views were received in written submissions, others verbally; some were invited, others offered freely in response to publicity surrounding the formation of the Working Party or release of its interim report. All are acknowledged as valuable contributions to the understanding of the Working Party of the implications of its task.





## 2. PRINCIPAL RECOMMENDATIONS

The recommendations highlighted below form the principal recommendations of the Working Party. They have been reproduced from the body of the report, but here are grouped against the terms of reference. The order of items from the terms of reference is varied to improve the continuity of presentation.

In the following sections of the report, the rationale for these recommendations is expanded. The full report also contains many minor recommendations and suggestions which substantiate the advantages of the broad proposals detailed below:

### 2.1 "Appropriate organisational structures and necessary legislative support." (Term of Reference No 6).

#### RECOMMENDATION 1 - Sections 4.6.1 and 4.7

THAT a South Australian Bushfire Prevention Council be established. In broad principle it should comprise:

- \* representatives of fire fighting organisations,
- \* local government,
- \* representatives of stakeholder groups with emphasis on the land ownership and the environment,
- \* major state agencies involved in land and risk management throughout the State, represented at the most senior levels of the organisation.

It is intended that the Council will become the focus for bushfire prevention in South Australia. In terms of authority, though, it is recommended:

#### RECOMMENDATION 2 - Section 4.6.1

THAT the Bushfire Prevention Council be an advisory body to the

Minister who is responsible for the Country Fire Services (presently the Minister of Emergency Services) and in whom executive power for bushfire prevention should be vested.

The links with the CFS are proposed to be further strengthened in:

RECOMMENDATION 3 - Sections 4.6.1 and 4.8

THAT the Chairman of the Bushfire Prevention Council should be the Director of the Country Fire Services and the staff support for the work of the Bushfire Prevention Council should come from the headquarters staff of the Country Fire Services.

Complementing this State level organisation, it is important to develop a professional approach to bushfire prevention at a local level. Thus it is recommended:

RECOMMENDATION 4 - Section 4.6.4

THAT all Local Councils and State Government agencies involved in rural land management be required to appoint or designate a "Bushfire Prevention Officer" whose task is to co-ordinate the preparation and ensure implementation of bushfire prevention plans for the Council or Government agency concerned.

To maintain co-ordination at this level it is recommended:

RECOMMENDATION 5 - Section 4.6.3

THAT each Local Government area that has significant bushfire prone land should have a District Bushfire Prevention Committee established under the auspices of the Local Council. Its composition should reflect the some groups as the South Australian Bushfire Prevention Council but its members will be drawn from the local management of these organisations. The committees should be chaired by a Local Government nominee and executive support should be provided by Local Government.

RECOMMENDATION 6 - Section 4.6.2

THAT in regions of significant bushfire hazard, a Regional Bushfire Prevention Committee be convened, bringing together similar groups to the proposed Bushfire Prevention Council but at regional level. The CFS Regional Officer should be a member and the executive officer of this committee which should review and co-ordinate the activities of the proposed District Bushfire Prevention Committees.

RECOMMENDATION 7 - Section 4.6.5

THAT District Bushfire Prevention Committees should, if they consider appropriate, have the power to:

- \* establish Local Bushfire Prevention Committees, and
- \* register Volunteer Bushfire Prevention Officers,

to assist in the development and implementation of bushfire prevention plans .

In order to establish this organisation it is recommended:

RECOMMENDATION 8 - Section 7.1

THAT Legislation be incorporated in the Country Fires Act 1976 for:

- \* the creation of the South Australian Bushfire Prevention Council and Regional, District and Local Bushfire Prevention Committees,
- \* the appointment or designation of Bushfire Prevention Officers by Local Government Councils subject to a schedule,
- \* the collection of levies from Local Government for bushfire prevention purposes as defined by schedule.

However, in order to preserve the separate responsibility for organisations with their own role in bushfire prevention, amendments to other acts are recommended as follows:

RECOMMENDATION 9 - Section 7.1

That the Electricity Trust of South Australia Act. 1946 requires amendment to:

- \* establish that ETSA is responsible for line clearance
- \* give ETSA power to enter land to carry out line clearance or to reconstruct service lines or mains
- \* give ETSA power to disconnect electricity where a powerline is damaged or in imminent risk of damage
- \* provide that, after a nominated date, landowners and occupiers have a responsibility not to permit unsuitable trees to grow beneath or adjacent to existing overhead powerlines where such trees are in contravention of a published schedule of tree varieties and their allowable distance from an overhead powerline
- \* give ETSA power to recover the cost of removal of such trees upon default by the landowner
- \* provide that landowners or occupiers notify ETSA of trees which have intruded into the clearance space and not to attempt to cut the tree themselves

RECOMMENDATION 10 - Section 7.1

THAT the Local Government Act be amended to empower Local Government to recover funds levied under the Country Fires Act from Local Government ratepayers under conditions determined by Local Councils.

- 2.2 "Define and Establish an appropriate process for determining environmentally sensitive and bushfire prone areas." (Term of Reference No 1).

The Working Party considered:

RECOMMENDATION 11 - Section 3.3.7

THAT the most appropriate process for determining environmental significance and bushfire prone areas is by policy area maps created by overlaying maps of:

- \* bushfire hazard computed from slope and ground fuel data,
- \* damage potential computed from a land use interpretation of population density data, and
- \* environmental significance using already published registers and zonings,

and to employ Regional and District personnel with local knowledge to review the resulting zone boundaries.

Furthermore, this mapping initiative is shown to be critical to the establishment of some aspects of bushfire prevention planning and policy. Thus it is further recommended:

RECOMMENDATION 12 - Section 8.2.3

THAT the relevant departments and agencies (including the Department of Environment and Planning, the Department of Lands and the Country Fire Services) give priority to a mapping program for high bushfire hazard areas of the State, with a view to producing policy area maps, which, after ground review and proving, will support the application of bushfire risk reduction policies.

- 2.3 "Strategies for reducing bushfire risks associated with powerlines, including planning considerations and setting priorities for undergrounding, giving consideration to ETSA's capacity to underground and the value of undergrounding." (Term of Reference No 3).

In line with a recommendation made by the Working Party in its interim report, it is considered:

RECOMMENDATION 13 - Section 5.4.1

THAT a requirement for all new powerlines in areas of high bushfire hazard to be constructed below ground be incorporated into Development Plans under the Planning Act. Until maps can be prepared to define the necessary policy areas and the statutory process of consultation is completed, it is recommended that ETSA continues to apply such a policy on its own judgement.

On the question of the replacement of existing overhead powerlines in high bushfire hazard areas with underground lines the Working Party recommends:

RECOMMENDATION 14 - Section 5.4.2

THAT a program for underground replacement of existing overhead powerlines in high bushfire hazard areas in order of priority is justified to the extent of \$6 million per annum (1984 values) for a number of years, being not less than five (5). This program needs to be reviewed annually in conjunction with all other bushfire prevention measures.

Right from the outset when decisions are being made on this program, it is important that all concerned have a realistic appreciation of the environmental impacts and that the temptation to confuse the environmental reason for promoting underground replacement with that of bushfire prevention be resolved. Thus it is recommended:

## RECOMMENDATION 15 - Section 5.4.7

THAT ETSA continue to negotiate with landholders and Local Government on the best available terms to proceed with a pilot underground powerline construction scheme of a sufficient length in a high bushfire hazard area to provide more detailed information on costs and environmental impacts in a 'typical' area. This information should be used to support approval submissions and environment impact statements (if required) for a larger scale program to place existing powerlines underground.

As the higher priority areas are completed, the value of further underground replacement will need to be closely reviewed. Such review will be aided if the CFS and the Bushfire Prevention Council and Committees are active in promoting alternative proposals for bushfire risk and hazard reduction, such as the Hazard Reduction Team proposal noted in this report (section 3.2.4).

Furthermore, underground replacement has been found to be by no means the only strategy available to ETSA to reduce the risk of bushfire. In this regard, it is recommended:

## RECOMMENDATION 16 - Section 5.3.8

THAT ETSA prepare a draft policy on the switching-off of mains to cover all circumstances where the powerlines cannot be reasonably considered to be safe from a risk of starting a major bushfire. This draft policy should be submitted to the proposed Bushfire Prevention Council for advice to the Government on its inclusion in State bushfire prevention plans. Thereafter intentions to apply the policy should be advised to the Regional and District Bushfire Prevention Committees.

Besides this specific recommendation, the Working Party emphasises the need for the overall planning of a comprehensive program to reduce the risk of bushfires being started by powerlines. Thus it is further recommended:

RECOMMENDATION 17 - Section 5.5.3

THAT ETSA undertake to prepare and to maintain a plan for the reduction of bushfire risk associated with powerlines and including:

- \* line clearance standards
- \* line clearance program schedules and a description of the extent of backlog work
- \* spacer standards and degree of achievement of those standards
- \* circuit breaker adjustment policy and impact on organisations which contribute to fire safety or counter disaster plans.
- \* line patrols on days of extreme fire danger
- \* policy on, planned extent of application of and expected impacts from switching off power
- \* underground construction of new power lines in high bushfire hazard areas
- \* the replacement where justified of existing overhead powerlines with underground mains in high bushfire hazard areas
- \* pilot studies and research into:
  - underground construction
  - insulated conductors

and to table the plan before the proposed South Australian Bushfire Prevention Council and, in part, before the proposed Regional and District Bushfire Prevention Committees

2.4 "The general philosophy of who should be responsible for line clearing and ground fuel removal and who should carry out line clearing." (Term of Reference No 2)

The requirement of ETSA to table plans for all of its bushfire prevention measures should not be construed as in any way removing responsibility from ETSA for line clearing or any other element of a total bushfire hazard reduction strategy. Thus the Working Party recommends:



RECOMMENDATION 18 - Section 5.5.3

That ETSA shall at all times retain responsibility for the bushfire risk arising from its electricity distribution. This must remain paramount while the negotiation of plans with the Bushfire Prevention Council or its Committees should be viewed as a forum in which ETSA can pursue elements of an improved plan requiring consultation in respect of costs, environmental impacts or other implications.

In respect of ground fuel removal, the Working Party recommends:

RECOMMENDATION 19 - Section 3.2.2

THAT responsibility for the bushfire hazard on land resulting from unsafe levels of ground fuel and for the removal of sufficient of that ground fuel to reduce the hazard must remain that of the land owner.

RECOMMENDATION 20 - Section 3.2.2

THAT responsibility for co-ordinating and monitoring ground fuel reduction on private land and Local Government land must lie with Local Government.

iIn determining who should undertake line clearance it was concluded:

RECOMMENDATION 21- Section 5.3.1

THAT all line clearance work be undertaken by ETSA.

- 2.5 "Line clearance requirements, tree cutting standards and public accountability for the line clearance program." (Term of Reference No 4).

The thrust of this report leaves accountability for line clearance broadly with ETSA. However, the Bushfire Prevention Council structure allows ETSA to have its standards independently examined and

confirmed as an element of total bushfire prevention planning.

Specifically it is recommended:

RECOMMENDATION 22 - Section 5.3.1

THAT ETSA submit its general standards and procedures for line clearance to the South Australian Bushfire Prevention Council and, on their advice, these be authorised by Government as a part of a State Bushfire Prevention Plan.

RECOMMENDATION 23 - Section 5.3.1

THAT detailed plans for line clearance and the extent of backlogs of line clearance be tabled by ETSA at the proposed District Bushfire Prevention Committees for co-ordination and inclusion into District bushfire prevention plans.

2.6 "Responsibility for costs and the means of cost recovery for the line clearing and undergrounding program." (Term of Reference No 5).

On the question of cost recovery for line clearing, the Working Party could see no requirement to significantly vary from the current policy. Thus, it should be accepted:

RECOMMENDATION 24 - Section 6.5

THAT, with the exception of costs recovered for the removal of unsuitable trees (recommendation 9), all other costs for line clearance should be met by ETSA.

Underground replacement of above ground powerlines was seen in a different light. Here, for reasons of both equity and manageability, the Working Party recommends:

RECOMMENDATION 25 (Section 6.3.2)

THAT the cost of underground replacement of existing overhead powerlines which is undertaken on the advice of the South

Australian Bushfire Prevention Council be recovered as follows:

- \* ETSA 50%
- \* the South Australian Government, 5%
- \* Local Government, 25%, calculated by reference to all land holdings in a defined area
- \* Local Government, 20%, calculated by reference to the number of properties immediately adjacent to an actual underground replacement project.

In the case of a new powerline, however, the Working Party recommends:

RECOMMENDATION 26 - Section 6.4

THAT where a new powerline is required to be placed underground as a bushfire prevention measure, then the contributions of cost between ETSA and the applicant for the new service or services should be the same as if the applicant had requested an underground powerline.

- 2.7 "In developing its proposals for organisational structures, the Working Party should take into account the broad requirements of bushfire mitigation planning and management." (Additional Term of Reference).

The first group of recommendations made in this regard are essential to the realisation of the proposals with particular reference to their effectiveness in the 1985/86 bushfire season.

RECOMMENDATION 27 - Section 6.2.1

THAT the general operating costs of the South Australian Bushfire Prevention Council should be funded under the same arrangements as the CFS Headquarters.

RECOMMENDATION 28 - Section 8.2.1

THAT early authority be given for the Director of the Country Fire Services to employ up to an additional four (4) staff on a temporary basis to enable a start to be made on the development of the technical and administrative support functions which will be required for the proposed South Australian Bushfire Prevention Council.

RECOMMENDATION 29 - Section 8.2.1

THAT the Government establish a non-statutory Interim South Australian Bushfire Prevention Council by inviting membership from those organisations listed in Section 4.7.

RECOMMENDATION 30 - Section 8.2.2

THAT State Government agencies with significant landholdings in bushfire prone areas make an early appointment or designation of an officer as a 'Bushfire Prevention Officer' and, using this officer as a co-ordinator to initiate (or continue) the preparation of bushfire prevention plans for Government Lands.

Finally, in the area of research on topics of concern in several States, the Working Party sees a role for the Commonwealth Government.

RECOMMENDATION 31 - Section 6.6.3

THAT the State Government canvass other States and, preferably jointly with other States, make an approach to the Commonwealth Government for the establishment of an Australian Bushfire Research Fund to be funded by the Commonwealth Government and administered by an appropriate Commonwealth Department in consultation with State bushfire prevention and protection agencies.

### 3. BUSHFIRE PREVENTION AND PROTECTION

#### 3.1 THE BUSHFIRE PROBLEM

Three factors combine to produce a serious risk to life and property from bushfires in South Australia. These are:

- \* fire start risks
- \* fire intensity factors
- \* land development of a type and location at risk to the impact of fire.

Individually these factors are not serious. The major fires of disaster proportions such as occurred on Ash Wednesday 1983 require all three factors to be combined.

##### 3.1.1 Fire Start Risks

These may be:

- \* natural
- \* related to human activity.

Predominant in the natural causes of fire is the occurrence of lightning strikes. Human agencies include the escape of fire from a controlled use, malfunction of equipment (powerlines, farm machinery, etc) and arson.

The natural agencies cannot be eliminated. Much can be done to reduce human causes of fire starts as described in Section 3.2.1. Yet complete elimination of these is not feasible. This means that some bushfires are inevitable in South Australia.

##### 3.1.2 Fire Intensity Factors

Once a fire starts, it is the fire intensity which determines whether it can be successfully suppressed by the methods available to the fire services or whether it will burn largely out of control as

happened on Ash Wednesday 1983. The damage to property and risk to life is also dependent on fire intensity. A more intense fire, requires a higher standard of protection of buildings and refuges for people if there is to be a reasonable chance of their survival.

Fire intensity is dependent on:

- \* the availability and quantity of fuels
- \* the weather conditions, and
- \* topography

Conditions of high temperature, strong wind and low relative humidity give rise to the risk of out-of-control bushfires. All that can be done in this event is to accurately forecast such days and to step up all prevention and protection efforts as well as upgrade all fire detection and fire suppression readiness schedules.

The topography as well as the higher winter rainfall of the Mount Lofty Ranges tend to combine and produce the remaining requirements of high slope and fuel to make these ranges particularly bushfire prone. Given extreme weather conditions, uncontrollable bushfires also can occur in forests and grassland as witnessed by the fires in the South East on Ash Wednesday 1983 or in more arid mountainous areas of the Flinders Ranges.

### 3.1.3 Land Use

A chain of circumstances must exist for life and property to be lost in a bushfire.

- \* a fire has to start
- \* it must develop intensity
- \* property development has to be in its path
- \* the standard of fire protection of that property must be inadequate for the intensity of fire which develops.

The factor that has greatly complicated the issues of effective bushfire prevention is the rapid increase in the number of people

building houses on urban and semi-urban type subdivisions in the urban fringe of high bushfire danger areas. The problem is not unique to South Australia; but South Australia has the problem as acutely as any other State, particularly in the Adelaide Hills, where, over the last 20 years there has been a substantial increase in development. This has partly been caused by the general expansion of the Adelaide metropolitan area, but also by the increasing public desire for living in the surroundings of a natural environment. This is a rather ironical consequence of the increasing community concern for environmental issues and conservation: that people destroy large tracts of natural bushland by building houses and roads and then vehemently fight to preserve what is left, thus creating a serious bushfire danger problem with a high potential for life and property losses.

Traditional attitudes and approaches to land development, building design, hazard reduction practices, standards of fire cover and even electricity distribution practices are severely challenged in these in these areas and quite new approaches are called for. The devastating bushfires in these areas on Ash Wednesday 1983 could not have more dramatically underlined this issue.

### 3.2 BUSHFIRE DAMAGE REDUCTION

To reduce bushfire damage, management programs must comprehensively address:

- \* fire start risks
- \* fire intensity factors
- \* land use at risk from the impact of fire.

#### 3.2.1 Reducing Bushfire Starts

Two approaches must continue to be applied to reduce the risk of bushfires starting:

- \* fire risk control must be a feature of the design of any potentially hazardous equipment, facility or process, and

- \* the public must be educated to use fire or potentially hazardous equipment with informed consideration of the risks involved.

Both approaches have been developed over many years in South Australia. The Country Fire Services (CFS) has co-ordinated this activity since 1977 and has become particularly enterprising in the areas of public education. A system of fire bans, penalties for misuse of fires and other legislative controls are also set in place to control the use of fire during the fire danger season.

Reducing the risk of bushfires starting is only one of the aims of public education. The emphasis is today as much on an improvement in the standard of fire protection of existing properties as described in Section 3.2.5.

One aspect of designing for risk reduction concerns the distribution of electricity. This is the subject of the whole of Section 5 of this report. In a total bushfire prevention program other aspects must also continue to be addressed, for example:

- \* vehicle or stationary engine exhaust systems
- \* welding equipment and procedures for use
- \* railway braking systems.

As described in Section 3.1.1, it is clear that all fire starts cannot be eliminated, hence the planning of action to limit fire starts must be considered with other bushfire risk contributing factors.

### 3.2.2 Ground Fuel Reduction

Ground fuel reduction is the only practical means available to limit the intensity of bushfires.

It is, however, a very difficult management problem. What is a hazardous ground fuel to one, may be precious stock fodder or a desirable bushland setting to others. In grassland it is an annual problem varying with the season and requiring control within those



few weeks of the year preceding the bushfire season. In dense bushland it is a problem which accumulates over perhaps a decade due to understory growth and falling debris from trees. In more open woodland it is part both.

To be effective as a defence against fires of the intensity of Ash Wednesday 1983, fuel reduction must be planned within a district or regional strategy. To be carried out at a cost which the community can afford, the effort must be largely voluntary, with landowners taking responsibility for their own land, co-ordinating their efforts and applying peer group pressure on unco-operative landowners. Establishing a suitably vigorous response in local communities and maintaining it over time will require a co-ordinated and well trained organisation which operates effectively within local communities.

This approach to ground fuel reduction is quite different from one which relies on residents to telephone the Local Council to complain about the block next door.

The Working Party was encouraged in this view as a result of an exercise held over the 1984/85 summer. During November 1984, the Minister of Mines and Energy, the Electricity Trust of South Australia (ETSA), the CFS, the Mitcham Council, the State Government Insurance Commission and the Blackwood Apex Club combined to sponsor a program of ground fuel reduction and public education in the northern hills face part of Belair. This resulted in the formation of a local committee which adopted the name FIRE (Fire Information and Reduction Exercise). One of the objectives of establishing this group was to evaluate the potential effectiveness of locally based (neighbourhood) groups in generating interest, awareness and action by landholders in implementing fire protection measures. Some members of the Working Party participated in or had contact with this group, and were impressed with its success.

Notwithstanding the emphasis of this report on the development of an ethic of planning, co-ordination and co-operation, it is important to establish where the ultimate responsibility lies. For ground fuel

removal, the Working Party believed this had to remain with the land owner or land manager.

#### RECOMMENDATION 19

THAT responsibility for the bushfire hazard on land resulting from unsafe levels of ground fuel and for the removal of sufficient of that ground fuel to reduce the hazard must remain that of the land owner.

However, if left entirely to individual land owners then the necessary strategic planning and co-ordination, already indicated to be so important, will not occur. The Working Party thus concluded that it is necessary to define responsibility of land owners. It is therefore recommended:

#### RECOMMENDATION 20

THAT responsibility for co-ordinating and monitoring ground fuel reduction on private land and Local Government land must lie with Local Government.

This recommendation simplifies an existing provision of the Country Fires Act 1976 which allows either the CFS Board or Local Government to exercise this responsibility.

Unanswered, is the question of co-ordination between the State as a manager of lands and Local Government. Currently, no organisation is placed to take this responsibility. This issue is addressed in Section 4 in terms of a proposal for a new organisational structure.

### 3.2.1 The Environmental Debate

Approaches to ground fuel reduction may involve:

- \* slashing and removal
- \* controlled burning
- \* chemical control.

If any of these is applied repeatedly to the same land, ecological change is a likely result. Yet on this point the evidence is ambiguous. For example, the balance of native flora and fauna with exotic species may be disturbed with no clear general indication of which trend will predominate.

Most of the debate centres on controlled burning of native vegetation. This debate is confused by the fact that periodic bushfires were a feature of the Australian bush prior to European settlement. These fires, whether natural or set at the hands of the aboriginal inhabitants, must have already had their ecological impacts.

During the 1970's the community became increasingly aware of environmental and conservation issues. Many in the community did, and still do, perceive fundamental conflicts between bushfire hazard reduction programs and ecological objectives. Three quite recent parliamentary enquiries have devoted sections of their reports to this issue:

- \* Report of the Select Committee of the Legislative Assembly Appointed to Enquire into Bush Fires in Western Australia. Section 5.1.2 November 1984.
- \* Report by the House of Representatives Standing Committee on Environment and Conservation "Bushfires and the Australian Environment" August 1984. Chapter 2.
- \* Report of the Select Committee of the Legislative Council on Bushfires in South Australia. February 1985. Section 4.1.

All highlight the difficulties, such as the lack of techniques applicable to a wide range of situations and all urge caution. There is a clear need recognised for continuing research into these issues. The Working Party tends to the view that in many situations the two objectives of hazard control and ecological conservation are not necessarily in conflict. Even when conflict is apparent, an acceptable program should be developed with effective planning and consultation.

Whatever the answer to the environmental questions, the current mood is that fuel reduction and fire prevention programs must be improved. This mood has arisen from two major factors:

- \* the devastation caused by the fires of Ash Wednesday 1983 and consequent reviews to find ways to reduce the risk of a similar disaster occurring and pointing to hazard reduction as a key issue.
- \* the increasing tendency for litigation by those affected by fire against those alleged to have started the fire. This has been particularly so where powerlines have been implicated but also in other cases (eg Delaney versus F S Evans and Sons Pty Ltd and the District Council of Stirling, Supreme Court Judgement No 7683).

#### 3.2.4 Hazard Reduction Team

To be efficient and environmentally sensitive, methods of hazard reduction (and ground fuel removal in particular) must be developed and taught to land owners, land managers, Local Government staff and volunteers. The organisation structure, described in Section 4 encompasses one approach.

A submission made to the Working Party by the CFS contained a further and worthy proposal. A 13 person team with two light attack fire fighting vehicles is proposed at an estimated annual cost of \$350 000.

The idea behind this initiative is to provide a professional unit with technical knowledge and practical ability in all approaches to hazard reduction. They would have a roving commission, coming on the invitation of District Councils or neighbourhood fire prevention committees. They would act as an extension service, offering advice. Through practical demonstration on 'field days' they would show the techniques of hazard reduction to volunteers and others who become involved in this activity. Their own efforts should set the standard as well as being an additional, albeit visiting, manpower resource for such programs.

They could also be made available to Government Departments to supplement their own manpower which may be inadequate in numbers, training and equipment to carry out major hazard reduction exercises on their land.

The Working Party is not equipped to assess this proposal fully, particularly in respect of its merits vis-a-vis other bushfire prevention measures. However, it is suggested that the proposal be developed in detail by the CFS for consideration by the Government.

### 3.2.5 Land Development

The chain of circumstances which potentially places life and property in the path of intense bushfires offers one final avenue for control, particularly in respect of future development.

Legislative control exists under the Planning Act which can be supported as required by Building Regulations. What is missing at this stage is an agreed specification of satisfactory standards of bushfire protection for new development and an appropriate organisation to inject such standards into the planning process with adequate authority.

Research has been done into standards of bushfire safety and the identification of areas of extreme bushfire hazard in which most development should be opposed. The task of bringing this information together should be an early priority for an organisation charged with the co-ordination of bushfire prevention and protection. Already the CFS and the Department of Environment and Planning have made a start.

A range of factors are involved;

- \* a means of hazard rating suitable for zoning or for case by case examination of development proposals
- \* definitions of buffer zone requirements
- \* rules for road planning for access
- \* special features of building design
- \* features which aid subsequent ground fuel control

- \* adequacy of water supply
- \* upgrading of the standard of fire cover of the fire service.

However, if a suitably authoritative organisation can develop acceptable standards covering these factors, the existing planning processes in South Australia should be capable of achieving a necessary control over new development.

### 3.2.6 Existing Land Use

Existing development presents different problems. When the standards for new development are determined it will be possible to reassess the extent of the problems of existing development.

The Working Party could see no alternative to accepting that the remedy of fire protection problems now are the responsibility of the current owners and their tenants. A bushfire prevention authority should be limited in its action to research and publicity of action which residents can take themselves. The CFS and the State Government Insurance Commission (SGIC) have already made a worthwhile start in this direction. These efforts could be enhanced through an advisory extension service.

Organized schemes to remedy the bushfire problem and funded through compulsory levies may be considered if there is a clear need and strong district support for collective action.

### 3.2.7 Fire Suppression Capability

Bushfire damage can also be reduced through the standard of fire cover given by the fire suppression services. The standard of fire cover is a measure of number and capability of fire units which can be deployed to a given place within a given short time.

The degree of reduction in bushfire damage is a function both of the standard of fire cover and of fire intensity. Generally, the community can afford a standard of fire cover which will be effective in quickly suppressing fires of low intensity. However, given fires of the intensity of Ash Wednesday 1983, even a very much enhanced

standard of fire cover would not have prevented the loss of much of the property which was actually lost. Among the limited strategies available to fire fighters during such an event are back burning, suppressing spot fires, mopping up and waiting for a favourable change in weather conditions.

Mopping up requires units to move behind the fire front suppressing fires which remain and threaten property which has survived the fire front.

For back burning, suitably placed fire breaks need to be planned and largely if not entirely, created in advance of the fire season. This, is one link between planning for fire suppression and bushfire prevention and protection activities.

The suppression of spot fires requires a good concentration of units down wind of lines on which it is believed that a fire will be contained. Windborne embers can, in bad conditions, be blown a number of kilometres ahead of the front. As they fall and kindle fires, they may be suppressed before they develop intensity. Again the success of this operation is related to the ground fuel load, thus to the thoroughness of ground fuel reduction.

Finally the degree of severity of weather conditions in which bushfires may be suppressed depends on the other factors which determine fire intensity, the ground fuel level in particular.

Thus in a number of ways fire suppression and the ground fuel removal strategy of bushfire prevention and protection are complementary and should be jointly planned.

Detailed consideration of fire suppression is outside of the terms of reference of the Working Party. It has been introduced here, however, to establish its strong links with the more central issue to this report; bushfire prevention and protection.

Besides suggesting a need for strong organisational links, there is another aspect which requires comment. Both are likely to be drawing

their finance through similar funding channels. To claim that a dollar spent on one is a dollar lost to the other may overstate this link. But it is true that the allocation of finance between fire prevention and fire suppression is a balance which must be achieved.

### 3.2.8 Disaster Contingency Planning

While an unacceptable risk to life and property persists, emphasis must continue to be given to disaster contingency planning. However, this deals with events which commence with the disaster event, whereas the thrust of this report is to reduce the risk of one form of disaster: the major bushfire.

While the links from disaster contingency planning to bushfire prevention are more tenuous, both must involve a strong element of planning within the same communities. Also in a strategic sense, the areas in which bushfire prevention and protection are likely to be most difficult are the areas with the greatest need for disaster contingency planning. The fire suppression services, already demonstrated to have strong links to bushfire prevention are, for quite different reasons, intimately involved in disaster contingency planning. They possess a well developed communication network and, in the event of bushfire, will be the principal source of intelligence on a developing disaster.

For all these reasons, strong links to provide liaison are required at all levels.

### 3.3 BUSHFIRE HAZARD MAPPING

There are a range of aspects of bushfire prevention and protection for which bushfire hazard mapping is either

- \* an extremely useful input for planning purposes and for the determination of priorities (e.g. ground fuel removal and undergrounding of powerlines) or
- \* an essential element in the application of policies which vary



depending on the degree of hazard (e.g. application of land development control under the Planning Act and the collection of levies from landowners in a given region).

For the purpose of planning and the setting of priorities, a degree of inaccuracy can be tolerated without significantly detracting from the value of the maps. For use in the application of differential policies a high standard of public acceptance of the accuracy is required. Here the maps need to be defensible in terms of both the approach to hazard rating and the placement of hazard zone boundaries.

Experience has shown that most of South Australia can be considered to be subject to bushfires. Nevertheless, it necessary to identify, in the most practical and meaningful way possible, the parts of the State which are able to be classified as more extreme bushfire prone areas.

### 3.3.1 Interpretation and Methodology

The Working Party's Terms of Reference require the reporting on:

"an appropriate process for determining environmentally sensitive and bushfire prone areas."

The Working Party found difficulty with the term environmentally sensitive given that, depending on the view of the individual, all areas could be considered environmentally sensitive. It has therefore taken the liberty of substituting the expression "environmentally significant". Even so it was appreciated that definition of all areas of environmental significance throughout the State would normally be a contentious and particularly time-consuming exercise. For the purpose of this study, a further decision was taken to limit the analysis of environmental significance to those areas which are also designated as bushfire prone. It is recognised that in adopting this approach a narrow interpretation has been placed on the Terms of Reference. The Working Party believes, however, that this approach is consistent with the aims of the Review.

To place this matter in context, it should be understood that the characteristics of an area that would support its designation as bushfire prone, such as vegetation cover and slopes, are the same characteristics that, in many instances, would result in the land being classified as environmentally significant.

The following interpretations have therefore been adopted:

- \* Bushfire prone areas are those areas which are more likely to be subject to recurrent bushfires and where there is a high potential for loss of life, property and character.
  
- \* Environmentally significant areas are those parts of the bushfire prone areas that are particularly valued by the community at large. These are also the areas whose character would be significantly impaired by intrusion of, or modifications necessary to permit access for the distribution of electricity through the area.

The first stages of the process for determination of areas requires the development of separate overlays for:

- \* bushfire hazard
- \* potential for damage to life and property
- \* areas of environmental significance.

Various combinations of these will form the basis of the zones in which certain policies should be applied

### 3.3.2 Determination of Bushfire Hazard

A comparative measure of bushfire hazard can be identified through a process of determining fire intensity.

Fire intensity is related to the damage that fire can cause once it starts.

Prediction of fire intensity requires information on fuel load, slope

and meteorological conditions, as described in Section 3.1.2. Consistent with the determination of the 'worst case' situation, meteorological parameters can be selected to represent a hot, windy summer day with wind direction to be upslope. This ensures that the rate of spread represents the maximum possible for each area under the selected conditions.

To obtain a precise delineation of the boundaries of the high hazard areas and to distinguish between the degrees of hazard, the parts of the State that contain combinations of fuel and slope should be subject to the same analysis as that involved in the Adelaide Hills Hazard Analysis Project being undertaken by the Department of Environment and Planning in association with the Country Fire Services.

In this project, zones of relative bushfire hazard are determined using recently developed computer programs. These programs use a geographic grid cell data base describing physical factors affecting fire propagation together with simulation models of fire behaviour to provide a measure of expected fire rate of spread under worst case meteorological conditions. The rate of spread is in turn used to calculate likely fire intensity, the chosen measure of hazard. The final maps represent a plot of intensity by certain nominated classes.

Since the process involves relatively new technology and because of the generalisations involved in the grid cell data base, it will be necessary to ensure that the mapping is checked on the ground through a process of consultation and review at district and regional level.

### 3.3.3 Determination of Potential for Damage to Life and Property

The high hazard areas identified above need to be evaluated in terms of potential for damage to life and property.

The potential damage caused by a wild fire in the high hazard areas can be derived from data on population density. It could be argued that different population densities in any high hazard area could attract different policies in response to the perceived potential for

damage relevant to that density.

In interpreting the above it might be expected that urban areas, where the population density is greatest, may attract different policies from rural living areas or the less populated farming areas.

This does not mean that the total assets in any given area are necessarily greater than the assets in any other area. It is rather an approach that allows policies to be tailored to the nature of each area.

Data on population densities by Collector Districts is available from the Australian Bureau of Statistics. Each Collector District encompasses approximately 200 dwellings. The Districts themselves vary significantly in size.

An overlay of the data on population density can be used to define different policy areas which reflect the potential damage to life and property applicable for that area.

#### 3.3.4 Determination of Areas of Environmental Significance

The potential for damage to the character of a high hazard area is greatest when the area is considered to have some environmental significance that is valued by the community at large. Areas of environmental significance for this exercise are considered to be as follows:

1. Significant vegetation associations inside or outside the Parks system.
2. Recreation parks .
3. Heritage items, including private land held under heritage agreements.
4. Landscape areas.

These individual areas are able to be identified from existing recorded data. For instance, landscape areas could be defined to include recognised landscape or rural landscape policy areas in the Development Plan (prepared under the Planning Act), plus specified scenic routes. Heritage items would be only those items recorded on the register. Significant vegetation associations can be determined from available literature (Davies, 1982). All of the above information is available in documents which have already been subject to various processes of consultation and review. No attempt would be made to introduce any area as environmentally significant if it has not already been documented within any of the categories defined above.

### 3.3.5 Determination of Policy Areas

The process outlined above could be used to identify a number of different policy areas, such as:

Policy Area 1            a high hazard area where the potential for damage to life, property or areas of environmental significance is not great.

Policy Area 2            a high hazard area with a high potential for damage to areas of environmental significance.

Policy Area 3            a high hazard area with a high potential for damage to life and property by virtue of the population density in the area.

Further policy areas could be established to cover combinations of (2) and (3) above (say Policy Area 4) and to take account of the existence of electricity distribution lines. A separate policy area could also be established as a buffer (say 500m) around the worst areas.

The policy areas defined in this exercise may attract different policies for the provision of electricity distribution mains. For example, powerlines may be placed underground in Policy Areas 2 and 4

as a first priority and tree cutting may be the appropriate short term policy for Policy Areas 1 and 3.

### 3.3.6 Fire Behaviour Simulation

As mentioned in Section 3.3.2, the bushfire hazard mapping phase uses a simulation model of fire behaviour. These models can be applied to map the progress of a fire theoretically, given data on start location, topography, fuel load and weather conditions. Besides being used in hazard mapping, the same models may be adapted to two other applications.

Given a means of maintaining data in updated form, fire behaviour simulation may be used during a fire. The spread intensity and speed of a fire may be forecast as an aid to the planning of fire fighting and counter disaster strategies.

The same models, with hypothetical weather data may be used to test and evolve more effective hazard reduction plans.

The Working Party has not undertaken to judge the current technical proficiency of these models. Even if, as may be expected, they are found to require further investigation to be fully effective in all of these applications, their potential value is significant.

More pertinent to the Working Party's deliberations is that their recommended use in hazard mapping involves a cost from which a wider value may be gained.

Over each of these applications, one warning is sounded. Computer research tends, of necessity, to be centrally organised. Unless a transfer of this technology is effected into regional and district organisations, its use will tend to weaken the Working Party's emphasis towards decentralisation.

### 3.3.7 Value of the Mapping Overlay Approach

It is expected that the maps produced in the manner described will

require review on the ground. It could be that a reasonable amount of adjustment will then be necessary.

Even so, the approach has advantages which could not be gained by mapping on the ground alone.

- \* It will ensure consistency in the application of rules and independence from human bias.
- \* It will provide a data base which will allow more detailed study of fire behaviour modelling.
- \* It will provide digitised information, such as topography which is, in any event, being developed by the Department of Lands for a variety of Government purposes.
- \* It will enable the zones to be economically reviewed in the future to reflect updated land use data and improvements in fire behaviour simulation.
- \* The process of review on the ground should convey much information on bushfire hazard to the Regional and District personnel involved, and this opportunity for their participation allows a strong measure of local knowledge to temper the more theoretical approach which is capable of statistical error.

Thus the Working Party makes the following recommendation:

#### RECOMMENDATION 11

THAT the most appropriate process for determining environmental significance and bushfire prone areas is by policy area maps created by overlaying maps of:

- \* bushfire hazard computed from slope and ground fuel data,
- \* damage potential computed from a land use interpretation of population density data, and

- \* environmental significance using already published registers and zonings,

and to employ Regional and District personnel with local knowledge to review the resulting zone boundaries.

### 3.4 BUSHFIRE PREVENTION AND PROTECTION IN SOUTH AUSTRALIA

Until 1977 there were three organisations concerned with bushfire prevention control. These were the:

- \* Emergency Fire Services within the Police Department
- \* Bushfire Research Committee within the Agriculture Department
- \* Bushfire Advisory Committee, a Ministerial Advisory Committee

With the establishment of the Country Fire Service Board in 1977 the functions of all three organisations were incorporated within the CFS.

The circumstances which lead up to this change and its impact on bushfire prevention are described in Appendix (III).

While the CFS has undertaken or maintained a number of worthwhile bushfire prevention initiatives, it has not been placed to undertake the wider co-ordination role which the Working Party has now recognised as essential.

This need has also been recognised by the South Australian Government and enunciated by the statement of the Minister of Emergency Services, when, last year he described the need for a new "Bushfire Authority".

### 3.5 KEY ISSUES FROM OTHER STATES

The Working Party directed a special study team to examine, among other things, the organisational arrangements for planning and managing bushfire mitigation in other States (see Section 1.2.4).

Appendix (IV) contains a summary of the findings of that team.



It was not intended to give an overview or analysis of bushfire management in other States, but rather to summarise what appeared to be the broad thrusts, existing, developing and planned, that seem relevant to possible opportunities for improvement in South Australia.

Notably it was found that:

- \* A State level Council or Board with high level representation from the major managers of land could be effective in achieving the commitment of such organisations to the objective of bushfire hazard reduction .
- \* Equivalent Regional and District Committees could be similarly effective in achieving commitment in more localised organisations and in co-ordinating the activities of State and local agencies.
- \* Land use planning procedures could most effectively be adapted to control the proliferation of bushfire problems in new development.
- \* Integration between bushfire prevention, fire services management, and counter disaster planning is essential at all levels.
- \* The appointment of trained bushfire prevention officers at district level will greatly assist effective bushfire prevention planning.
- \* Funding arrangements vary and none appear to be without problems, for example in finding a balance in the executive level representation between those who provide funds, those who provide professional management skills and those who provide volunteer labour.
- \* South Australia is not alone in facing an acute backlog in the training of bushfire prevention officers.

### 3.6 CRITERIA FOR EFFECTIVE BUSHFIRE PREVENTION MANAGEMENT

There are a number of criteria that need to be satisfied if an effective bushfire prevention management program is to be achieved.

- \* accountability
- \* co-ordination
- \* participation
- \* decentralisation
- \* planning (bottom up)
- \* training.

#### 3.6.1 Accountability

If an individual or organisation is to be held accountable for results then it must have control over the resource required to achieve those results. The most effective results will be achieved where there is full accountability, ie there is not a shared accountability.

Whilst recognising the complexity of interests in bushfire prevention planning, improvements must be directed at better satisfying the above conditions. In considering, for example, question of accountability for adequate electricity line clearance, care must be taken that in establishing externally approved standards there is not a shift from ETSA, which has the responsibility and the resources to carry out the program, to some other groups or organisation.

One of the difficulties with the present provisions in the South Australian Country Fires Act dealing with hazard reduction on private land is that there is a shared accountability between Local Councils and the Country Fire Services Board.

#### 3.6.2 Co-ordination

There are many agencies at all levels of government and outside government that have responsibilities in bushfire prevention. On the grounds of efficiency, common standards and learning from experience,

any arrangement which improves the level of co-ordination will improve the effectiveness of programs.

### 3.6.3 Participation

Closely linked to co-ordination is participation in both planning and implementation of programs. Structures must be put in place which invite and require participation. Just saying that there must be better co-ordination and participation will seldom result in that happening. Some change must be made to the system to facilitate this.

### 3.6.4 Decentralisation

In some ways decentralisation runs counter to ideals of co-ordination. However, in the area of bushfire prevention planning it is critical that structures be developed which ensure co-ordination with decentralisation.

By allowing local freedom for significant elements of planning and co-ordination, participation becomes possible for many more people. These people may be much closer to the community and the environment which must live with their decisions. In this event, their decisions are more likely to be sensitive to local conditions and their participation will strengthen their commitment to see their plans carried out. This may detract from the degree of co-ordination theoretically possible with a more centralised organisation. However, this will be more than compensated by success in motivating many more hands and minds.

### 3.6.5 Planning

Effective planning in bushfire prevention is a result of co-ordination, participation and decentralisation. Detailed planning must take place at the most local level possible and plans covering wider areas must be an amalgamation of more local plans. However, such planning must be done within broad guidelines. There can be a tendency when considering the development of co-ordinated plans (and even for their implementation) to move away from the organisation

that has the accountability and give it to the co-ordinating group. Roles and responsibilities of participating organisations must be clearly defined so as to avoid this occurring.

### 3.6.6 Training

Bushfire protection planning is becoming more complex as community values change, land useage changes and potential damage from bushfires increases. This requires that all those involved in bushfire management - fire fighters, land planners, land managers, etc - must be better trained and more professional in their approach.

In many areas of South Australia it is also relevant that there there has not been a continuous development of a tradition of scientific management of bushfire hazard. Furthermore, the local conditions of limited bushland mixed with rural land and intensive development is a new experience everywhere in Australia. This is now being recognised as requiring a new approach.

This points to the likelihood that in the early years of the establishment of a bushfire prevention and protection organisation, the shortage of trained personnel will be the one factor most limiting to success.

#### 4. ORGANISATIONAL PROPOSALS

##### 4.1 ACTIVITY STREAMS RELATED TO BUSHFIRE PREVENTION

In providing for effective and efficient bushfire prevention planning due recognition must be given to the very large number of stakeholders that are involved. In order to rationalise the processes more clearly the following five main streams of activity can be identified:

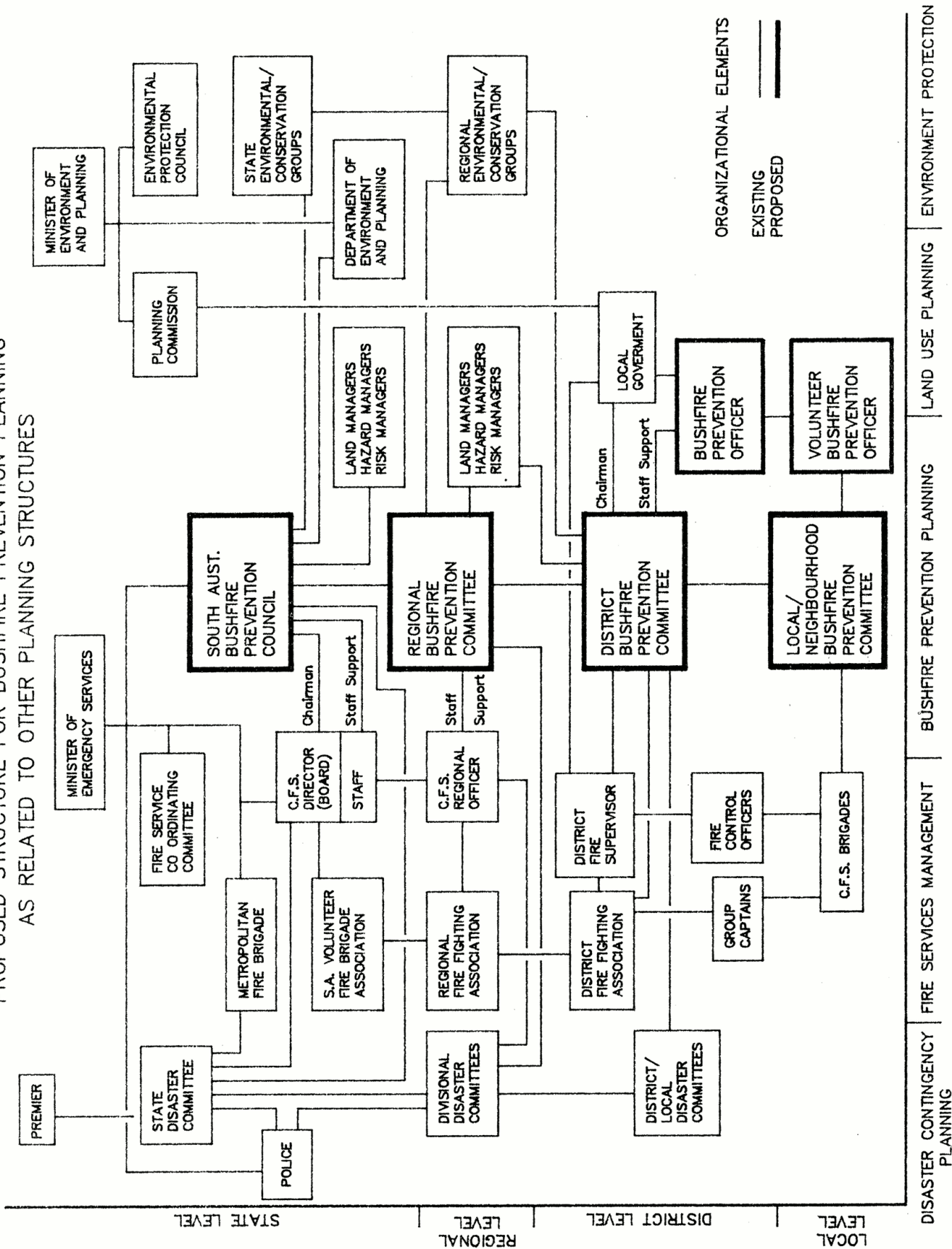
- \* (Bushfire) Disaster Contingency Planning
- \* Fire Services Management
- \* Bushfire Prevention Planning
- \* Land Use Planning
- \* Environmental Planning

Each of these main streams with the exception (at least to a major extent) of bushfire prevention planning, have complex organisational arrangements in place. There are quite complicated inter-relationships between a wide range of organisations each addressing themselves to a part of the overall objective of minimising the impact of bushfires. Diagram 1 highlights the way in which these organisations interact and shows in summary form the recommendations for overcoming the shortcomings in bushfire prevention planning. The new initiatives to be recommended are shown in bold outline.

The links shown in Diagram 1 are the lines of delegation and co-ordination which describe the interactions required during the phases of planning and management review. Not shown are the specific lines of command and control and additional organisations such as the State Emergency Service (SES) which come into play during and after an actual bushfire disaster event.

There are three Cabinet Ministers with responsibility for the activities covered by the five main streams identified above. Should there be unresolvable conflicts of objectives between these main streams it is clear that the resolution of these lies with State

PROPOSED STRUCTURE FOR BUSHFIRE PREVENTION PLANNING  
AS RELATED TO OTHER PLANNING STRUCTURES



Cabinet. However, there is only one Cabinet Minister accountable for the activities within each of the main streams and it seems desirable that this remains the case.

#### 4.2 (BUSHFIRE) DISASTER CONTINGENCY PLANNING

Bushfires are but one potential form of disaster within the State and in planning for dealing with bushfire related disasters clearly the fire services have a significant part to play. Counter disaster planning also involves the Police, SES and other functional emergency services.

Overall disaster management, particularly the planning and operational functions defined in the State Disaster Plan is co-ordinated by the State Disaster Committee. It is important that this planning be integrated with the management of bushfire prevention and suppression at State, Regional, (or Divisional) District and, where appropriate, local levels.

#### 4.3 FIRE SERVICES MANAGEMENT

Fire Services Management involves the efficient and effective deployment of fire service facilities and trained fire fighters throughout the State. The Metropolitan Fire Brigade (MFS) and the Country Fire Services (CFS) have clear accountabilities for this activity within their various fire districts. There have been difficulties in co-ordination of the two fire services and the Fire Services Co-ordinating Committee has been established to examine ways of improving co-ordination, co-operation and for developing ways by which the two services can be better integrated in their activities. A 'Joint Emergency Services Combating Plan' has been prepared and provision made for a joint co-ordination centre, the 'Joint Emergency Services Fire Intelligence Centre' (JESFIC) to enhance overall co-ordination and operational response by the MFS, CFS and Police.

The other organisations or individuals shown under Fire Services Management on Diagram 1 relate to positions or organisations involved in the management of the CFS through to individual brigades.

In the operational area of the CFS, interaction between the CFS full-time professional staff and the volunteers takes place at Regional Fire Fighting Association level. However, the newly formed South Australian Volunteer Fire Brigade Association will also clearly be interacting with the CFS at the most senior management levels. Regional and District Fire Fighting Associations are constituted under the Country Fires Act and direct their efforts towards training and equipment and logistics co-ordination. They do not appear to address themselves to land management issues which are seen as the province of Local Government.

Within this structure there are provisions for ensuring effective command channels in the event of a developing fire emergency.

#### 4.4 LAND USE PLANNING

The Minister of Environment and Planning in conjunction with the South Australian Planning Commission and Local Government has the responsibility for land use planning in South Australia. There has been, as in other States, a growing awareness of the importance of bushfire hazard in considering zoning and development plans in bushfire prone areas. It is considered that there is a need for land use planning to be co-ordinated with, and implemented as part of, the overall bushfire prevention package.

#### 4.5 ENVIRONMENTAL PLANNING

As already indicated in this report, environmental and conservation issues are perceived in wide cross sections of the community as being important. The environmental issues relating to land use planning have been recognised in the establishment of the Department of Environment and Planning. There is a need for those responsible for environmental protection measures in the State to have an input into bushfire prevention planning.

A general watch-dog role is maintained in this area by the Environmental Protection Council (EPC) which reports directly to the Minister of Environment and Planning. However it would compromise the



independence of the EPC if they were directly involved in bushfire prevention planning. Therefore environmental view demands separate links to the Department of Environment and Planning and community based environmental groups.

#### 4.6 RECOMMENDATIONS FOR BUSHFIRE PREVENTION PLANNING

##### 4.6.1 South Australian Bushfire Prevention Council

It is recommended:

###### RECOMMENDATION 1

THAT a South Australian Bushfire Prevention Council be established. In broad principle it should comprise:

- \* representatives of fire fighting organisations,
- \* local government,
- \* representatives of stakeholder groups with emphasis on the land ownership and the environment,
- \* major state agencies involved in land and risk management throughout the State, represented at the most senior levels of the organisation.

Membership should include a representative or representatives from:

- \* Country Fire Services
- \* Metropolitan Fire Service
- \* State Disaster Committee
- \* Local Government Authorities
  - one from a rural district
  - one from a part urban or rural living district
- \* Volunteer fire fighters
- \* Rural land holders
- \* The environmental/conservation movement

- \* National Parks and Wildlife Service
- \* The Electricity Trust of' South Australia
- \* Department of Environment anti Planning
- \* Department of woods and Forests
- \* Department of Agriculture
- \* Department of Local Government
- \* Engineering and Water Supply Department
- \* Up to four (4) additional members with specific knowledge of bushfire prevention and protection could also be appointed by the Minister.

This is a large group and as such reflects the wide range of stakeholders in bushfire prevention planning.

The South Australian Bushfire Prevention Council should not act as an adviser to the CFS in its role as a fire fighting organisation.

However, to ensure that there is close co-operation between the CFS and the South Australian Bushfire Prevention Council it is recommended:

### RECOMMENDATION 3

THAT chairman of the Bushfire Prevention Council should be the Director of the Country Fire Services and the staff support for the work of the Bushfire Prevention Council should come from the headquarters staff of the Country Fire Services.

Given that the South Australian Bushfire Prevention Council should not have a role in advising the CFS the question must be raised as to whether either a small board should be permanently appointed to guide the broad policy direction of the CFS or whether a separate small advisory committee should be established to advise the management of the CFS. In order to ensure that the volunteers within the CFS have effective representation in policy formulation within the CFS it is recommended that a small board or executive panel of no more than five be retained and that the Director of the CFS be full time Chairman of this body. This will ensure that the Director of the CFS

is able to deal directly with the Minister of Emergency Service and thus ensure a clear accountability to the Minister for the performance of the CFS. As Chairman of the South Australian Bushfire Prevention Council the Director of the CFS becomes the key adviser to the Minister on all aspects of bushfire prevention and suppression planning within South Australia.

There are two options available for the basic role of the South Australian Bushfire Prevention Council. The first is that it be an advisory body to the Minister and that its recommendations be approved by the Minister. The Council should fall within the ambit of the Country Fires Act and should not have its own separate legislation under this option.

The second option requires that the South Australian Bushfire Prevention Council has statutory powers to authorise things in its own right. For example it could, in its own right, declare certain areas as High Risk areas. It could approve the line clearance standards of the Electricity Trust of South Australia (ETSA) and indeed hold ETSA accountable for achieving those standards.

Given the large membership of the Council and the diverse interests represented on it, it is considered:

#### RECOMMENDATION 2

THAT the Bushfire Prevention Council be an advisory body to the Minister who is responsible for the Country Fire Service (presently the Minister of Emergency Services) and in whom executive power for bushfire prevention should be vested.

Before considering further the role and scope of the work of the South Australian Bushfire Prevention Council it is appropriate to consider the other recommendations implied on Diagram 1.

#### 4.6.2 Regional Bushfire Prevention Committees

It is considered that the South Australian Bushfire Prevention

Council will not be able to be effective in addressing bushfire prevention planning in isolation from similar groups being established at regional and district council levels. Many elements of the Victorian model outlined Appendix (IV) of this report would seem appropriate for South Australia.

The Regional Bushfire Prevention Committees would be composed of similar groups, as appropriate, to the Bushfire Prevention Council but with regional management representation. It is envisaged there be seven or eight regions corresponding to CFS regions. In those regions of lower bushfire hazard it may not be necessary to establish a Regional Bushfire Prevention Committee.

Accordingly it is recommended:

#### RECOMMENDATION 6

THAT in regions of significant bushfire hazard a Regional Bushfire Prevention Committee be convened, bringing together similar groups to the proposed Bushfire Prevention Council but at regional level. The CFS Regional Officer should be a member and the executive officer of this committee which should review and co-ordinate the activities of the proposed District Bushfire Prevention Committees.

If the CFS Regional Officer and other members of the Regional Bushfire Prevention Committee were also represented on the Divisional Disaster Committee then the necessary integration will be enhanced.

#### 4.6.3 District Bushfire Prevention Committees

It is recommended:

#### RECOMMENDATION 5

THAT each Local Government area that has significant bushfire prone land should have a District Bushfire Prevention committee established under the auspices of the Local Council. Its

composition should reflect the same groups as the South Australian Bushfire Prevention Council but its members will be drawn from the local management of these organisations. The committees should be chaired by a Local Government nominee and executive support should be provided by Local Government.

The broad thrust of the work of these committees should be along the lines of local advisory committees constituted under the Victorian Country Fire Authority Act viz:

- \* to plan the burning or clearing of fire breaks within the area for which it is appointed
- \* to advise the appropriate authorities as to the existence of and steps to be taken for the reduction of fire hazards within the area
- \* to recommend to the appropriate authorities the allowance or disallowance of applications for permits to undertake controlled burning
- \* to recommend any action which the committee deems necessary or expedient to be taken for reducing the risk of an outbreak of fire or for the suppressing of any fire which may occur within the area
- \* to advise the Bushfire Prevention Officer concerning the removal of fire hazards
- \* to refer to the Regional Bushfire Prevention Committee all matters which in the opinion of the District Bushfire Prevention Committee should be so referred.
- \* to review local bushfire prevention plans of all major land holders in the council area including the council itself.
- \* to ensure that notices are issued by local councils for fire hazard removal.

- \* to promote interaction with District and Local Disaster Committees.

Essentially the Committee is a co-ordinating and advisory body to the Local Councils. All major land managers in the district should be required to table their fire prevention plans at District Bushfire Prevention Committee meetings. It is envisaged that the committee will discuss these plans and may ask or recommend that the particular agency alter its plan.

Should there be disagreement between the agency concerned and the District Bushfire Prevention Committee then the matter is referred to the Regional Bushfire Prevention Committee and if necessary, to the South Australian Bushfire Prevention Council or if still necessary to the Minister and Cabinet for final resolution. Parallel with this process of course will be a process of referral within the particular agency concerned such that more senior officers within the particular agency will represent the agency's case at each of the succeeding levels. It is anticipated that such disagreements will be few and that even fewer will need resolution beyond Regional Committee level. There must be no attempt by the District Bushfire Prevention Committee to usurp the accountability of the particular agency in carrying out its responsibilities. The objective of the Committees at all levels is to ensure consultation and co-ordination and not to take over responsibility.

#### 4.6.4 Bushfire Prevention Officers

It is recommended:

##### RECOMMENDATION 4

THAT all Local Councils and State Government agencies involved in rural land management be required to appoint or designate a "Bushfire Prevention Officer" whose task is to co-ordinate the preparation and ensure implementation of bushfire prevention plans for the Council or Government agency concerned.

Such Officers may be full-time professional Bushfire Prevention Officers of the organisation or the responsibilities can be placed part-time with other officers of the organisation concerned. A further approach which may be preferable in some circumstances, is for two or more organisations with responsibilities for adjacent lands to share the services of one Bushfire Prevention Officer. Which of these options is adopted by each particular organisation will clearly depend to a large extent on the relative importance of the bushfire prevention management in overall context of the organisation's activities.

It is also strongly recommended that appropriate training programs be instituted for Bushfire Prevention Officers.

As recommended in Section 4.6.5, the Working Party was also of the view that Local Government should have the power to appoint volunteer Bushfire Prevention Officers who would participate in the development of bushfire prevention plans and in the identification of hazards on a part-time voluntary basis. This should contribute towards the capacity of the Local Council to identify land containing undue hazard in a particular area.

As described under the description of duties of the District Bushfire Prevention Committee the committee itself is required to bring to the attention of the Bushfire Prevention Officer any undue hazard in the area. This should eliminate the necessity in the Country Fires Act for the Country Fire Service Board to have the powers to issue notices to private land holders for hazard removal. It is recommended that this power be solely in the hands of Local Government and that the District Bushfire Prevention Committee have the responsibility of ensuring that this power is appropriately exercised.

#### 4.6.5 Local Neighbourhood Bushfire Prevention Committees

The Belair FIRE Committee has demonstrated the effectiveness of localised groups working together to achieve better bushfire planning. However, when this level is considered, the issues start to spread from just land management type issues to wider disaster

management and community awareness of what to do in the event of a bushfire. This suggests that the role of Local Bushfire Prevention Committees should incorporate some aspects of the work of the District Disaster Committees and thus there is a bottom level bridge between those two planning streams.

It will not be appropriate or necessary to have Local or Neighbourhood Bushfire Prevention Committees in all areas of the State. These are likely to be more appropriate in the urban fringe areas that have high bushfire danger. This is because the number of individual land holders is greater in a given area and their background is more likely to be urban than rural and they need help and leadership in coping with the general bushfire issue. The Working Party therefore considered:

#### RECOMMENDATION 7

THAT District Bushfire Prevention committees should, if they consider appropriate, have the power to:

- \* establish Local Bushfire Prevention Committees, and
- \* register Volunteer Bushfire Prevention Officers,

to assist in the development and implementation of bushfire prevention plans.

#### 4.7 ROLE AND RESPONSIBILITIES OF SOUTH AUSTRALIAN BUSHFIRE PREVENTION COUNCIL

Having considered the structure and functions of Regional and District Bushfire Prevention Committees it is appropriate to more specifically outline the role and responsibilities of the proposed South Australian Bushfire Prevention Council. Its role should include the following:

- \* Advise the Minister on all aspects of bushfire prevention in the State, either on the Council's own initiative or at the request of the Minister.



- \* Oversee the formation and activities of Regional and District Bushfire Prevention Committees.
- \* Develop guidelines and requirements for the preparation of bushfire prevention plans by State and Local Government agencies.
- \* Advise the Minister regarding public endorsement of such plans at State level. (This would incorporate endorsement of ETSA line clearance standards which are a part of its bushfire prevention planning).
- \* Prepare and release educational and publicity material in relation to bushfire prevention, subject to the prior approval of the Minister. This would include material prepared by ETSA (eg line clearance standards) and material currently produced by CFS, SGIC etc.
- \* Recommend to the Minister that relevant government agencies should develop bushfire prevention policies and practices, eg:
  - the Department of Environment and Planning in relation to development plans
  - Building codes
  - CFS training programs for bushfire prevention officers.
- \* Advise and recommend to the Minister on the declaration of bushfire hazard zones in the State in order to guide all agencies and authorities in planning. This advice should be based on advice given by the Country Fire Service and Department of Environment and Planning.
- \* Recommend to the Minister the establishment of bushfire prevention funds and appropriate collection processes.
- \* Act as a forum to resolve differences between conflicting objectives in bushfire prevention, eg, environmental protection and bushfire hazard reduction.

- \* Recommend to the Minister any legislative changes required to improve bushfire prevention measures in the State.
- \* Have the power to establish working parties to undertake specific investigations of bushfire prevention issues.
- \* Prepare an annual report to the Minister on bushfire prevention activities in the State.

#### 4.8 TECHNICAL AND SUPPORT SECRETARIAT

It is not intended that members of the Bushfire Prevention Council should become involved in researching issues, formulating submissions, or detailing policy. These functions should be performed by a Technical and Support Secretariat responsible for serving the Council. The detailed tasks of this Secretariat would be to:

- \* Train Fire Prevention Officers.
- \* Receive and evaluate submissions from the public, Fire Management and Emergency Authorities, Regional and Local Bushfire Prevention Committees.
- \* Research proposals and initiatives from other Government agencies and the public generally.
- \* Carry out investigations into technical, planning and regulatory initiatives.
- \* Prepare briefs for special investigations.
- \* Prepare briefs for preparation of education and publicity material.
- \* Formulate directives and advisory bulletins.
- \* Formulate detailed policy statements based upon Council resolutions.
- \* Prepare submissions from the Council to the Minister.
- \* Prepare draft standards for bushfire prevention and protection.

A staffing level of up to 5 persons is proposed for the Technical and Support Secretariat, with one of these people expected to be available from within the existing CFS establishment. The positions could involve:

- \* Secretary to the Council {one officer)
- \* Clerical and Typing Support (one officer)
- \* Training and Research Officers (three officers)

The task of the Council Secretary would include:

- \* prepare agendas for Council and its sub-committees
- \* record the minutes of meetings
- \* initiate action resulting from meetings
- \* prepare draft press releases for consideration by the Minister
- \* participate in the deliberations of the sub-committees.

The largest part of the task of the Training and Research Officers is expected to be that of training. The training of the proposed Bushfire Prevention Officers is a vital task in ensuring the success of the Bushfire Prevention Council. To place some order of magnitude on the level of training required, it is anticipated that training for up to 102 of the anticipated Local Government District Bushfire Prevention Officers and 10 or so Government Agency Bushfire Prevention Officers would be required in the initial phase.

The development of local fire prevention plans requires skills to assess fire hazards, to identify community assets, to develop fuel reduction plans and proposals for action. The implementation of fuel reduction programs requires skills in the correct use of fire and other hazard reduction techniques. Aside from the training function, these officers would also be required to:

- \* provide advice to Local Councils on the preparation of bushfire prevention plans
- \* refine and update the planning process by incorporating
  - appropriate recommendations arising out of bushfire enquiries
  - improved planning initiatives developed by Local Councils in the formulation of their plans
  - research findings from projects conducted through the agency of the Bushfire Prevention Council, Fire Services, or other fire management or fire research organisations
- \* assist regional committees

- \* monitor the arbitration and conciliation of disputes
- \* monitor fuel curing and fuel levels throughout the State
- \* liaise with Local Government to ensure the uniform setting of Fire Danger Seasons on a regional basis

#### 4.9 ISSUES REQUIRING THE ESTABLISHMENT OF CONSULTATION OR APPROVAL PROCESSES

Issues that have been identified by the Working Party as needing reference to the proposed Bushfire Prevention Council or appropriate Bushfire Prevention Committees include:

- \* Declaration of bushfire hazard areas. This would be achieved by the South Australian Bushfire Prevention Council advising the Minister who would make such declaration. This would be on the advice it, in turn, has received from District and Regional Bushfire Prevention Committees and from the Department of Environment and Planning and the CFS.
- \* Ensuring hazard reduction programs are achieved. This has been dealt with under the heading of District Bushfire Prevention Committees and the mechanism outlined there.

In Section 5 of this report, the problems of electricity distribution are explored. This area has additional requirements for consultation and approval which may be summarised:

- \* Endorsement of electricity line clearance standards. ETSA should propose line clearance standards for consideration and, as appropriate, recommendation by the South Australian Bushfire Prevention Council for approval by the Minister. ETSA then should be required to publish the standards it is using and the leaflets outlining the standards should clearly state that the standards have been endorsed by the South Australian Bushfire Prevention Council and approved by the Minister.
- \* ETSAs authority to cut trees. It is considered this is best dealt with by changes to the Electricity Trust Act such that it

is authorised to cut trees within the guidelines and standards endorsed by the South Australian Bushfire Prevention Council and approved by the Minister.

- \* Line Clearance Arbitration. This is most appropriately dealt with through the District Bushfire Prevention Committee. No further right of appeal is envisaged. This will ensure that the District Committee, with its local knowledge, will truly attempt to resolve matters and not abrogate its responsibilities to a Regional or State Authority where decisions could be less sensitive to local circumstances. While individual disputes may not be referred, matters of policy arising from the hearing of disputes or from any deliberation of a District Committee should be referred for consideration at a higher level.
  
- \* Priorities for Bushfire Prevention Programmes and expenditure. A number of issues relating to questions such as, whether public money should be spent on placing existing powerlines underground as a bushfire prevention measure versus using those funds for other bushfire prevention projects, should be dealt with by the South Australian Bushfire Prevention Council and the Minister advised accordingly. Proposals in this regard can be referred to the Council either by the CFS, other members of the Council or District and Regional Bushfire Prevention Committees.



## 5. ELECTRICITY DISTRIBUTION RISKS

### 5.1 ELECTRICITY DISTRIBUTION

The Electricity Trust of South Australia (ETSA) is the only major authority distributing electricity in the State.

In the context of this report, the distribution of electricity means the network of 11kV and low voltage mains, both overhead and underground by which electricity is supplied to customers. The transmission of electricity via lines of 33kV and higher voltages generally requires a very high standard of line construction for safety reasons. This acts to reduce their risk of causing fires and hence transmission lines are not further considered in this report.

In suburban areas and the more intensively settled rural areas which include most of the high bushfire hazard regions of South Australia, 11kV mains are used to conduct electric power from substations to small transformers which provide low voltage (240V phase to neutral, 415V phase to phase) power supply to electricity consumers.

In suburban areas, low voltage street mains are installed: in rural areas, it is becoming common to avoid long lengths of low voltage lines and to provide a transformer for each customer. 11 kV and low voltage mains have traditionally been constructed on poles using bare conductors. Today both may be safely installed underground using cross-linked-polyethylene (XLPE) cable at an additional cost which depends on the digging conditions.

For more than a decade, Local Government has in the majority of cases, used its statutory powers to have underground mains installed in new urban land divisions. This results in developers paying the additional costs and passing them on in the price of land. However, long lengths of existing overhead mains remain in the high bushfire hazard areas.

In the more sparsely settled rural areas, electric power is extensively distributed by 19 kV single-wire-earth-return (SWER)

systems. This is an inherently safer system which is less common in the areas of greatest exposure of life and property to bushfire risks. Nevertheless, on Ash Wednesday 1983 a number of the fires in the South East of the State were alleged to have been started by SWER lines.

## 5.2 IGNITION OF FIRES BY POWER LINES

Three ignition models have been identified to explain how a powerline could start a fire.

- \* The falling of droplets of molten conductor metal heated by the electric current:
  - during short circuits when conductors come into contact with each other (clouting), or
  - at high resistance spots in the line (eg corroded joints).
- \* The falling of burning organic matter (eg branches, birds etc) ignited by the electric current arising from bridging between conductors, or from bridging between a conductor and the ground (eg across an insulator).
- \* The ignition of ground vegetation by a current between a live fallen conductor and the ground.

The common contributing factors are therefore:

- \* Very high air temperature when conductors expand, sag and are more prone to clouting and when molten metal and burning organic matter is more likely to ignite ground fuel.
- \* Very high winds when clouting due to air turbulence is most likely. when trees and branches are most likely to displace conductors causing conductors to fall or clout and when organic matter is most likely to be blown across conductors.



- \* The presence firstly of dry tinder fuels (eg dry annual grass) on the ground within as much as 100 metres of the powerlines and secondly of continuous areas of ground fuel for the subsequent spread of the fire.

These are the same conditions which give rise to days of extreme fire danger when bushfires, once started are most difficult to control.

In addition the density of powerlines is related to population density and property values.

These factors emphasise the conclusion of Barber (1977) and W D Scott (1984) that although some 2% of all bushfire ignitions may be attributed to powerlines, it is possible that they could contribute more than 50% of the total bushfire risk to life and property on days of extreme fire danger. The Working Party endorses the view that 'fire starts' is an inappropriate measure of total bushfire risk. when 'potential for damage' is adopted in its place, the serious nature of certain of the risks associated with powerlines can be properly understood. The damage inflicted on Ash Wednesday 1983 was indicative of this conclusion, although, given the many initiatives taken by ETSA since then, these risks are expected to have already been reduced.

Fires have also occurred as a result of the failure of line hardware components and have been caused by birds and animals. However, the occurrence of these incidents is not dependent on extreme bushfire conditions. On Ash Wednesday 1983, one fire was started in this manner. Thus this too is an area requiring attention, though as much for the reason of general line safety at all times than as a part of a specific bushfire prevention strategy.

Falling poles are not a significant problem in South Australia due to the almost exclusive use of concrete-steel 'Stobie' poles.

### 5.3 RISK REDUCTION STRATEGIES

A range of bushfire risk reduction strategies are available to ETSA. They vary in effectiveness and cost and in their impact on the environment and the community.

### 5.3.1 Line Clearance

Tree cutting has traditionally been regarded as necessary for the protection of overhead lines and the safety of people. The line clearance cycles were shortened after 1977 in response to a review of bushfires in Victoria by Barber (1977) and again in 1983 following the Ash Wednesday Fires. This time the objective has been to reduce the risk of bushfires. Currently line clearance costs ETSA in excess of \$8 million per annum.

W D Scott (1984) recommended that ETSA retain full responsibility for Line clearance. The reasons are:

- \* The Trust is placed to mount a systematic, well equipped and efficient operation
- \* The assurance that the job is done is greater than if left to landowners
- \* The Trust can train crews to undertake the work safely
- \* Better standards may be developed for both line safety and the treatment of trees
- \* ETSA will be encouraged to take care where it places its powerlines in future

The Working Party endorses this view and recommends:

#### RECOMMENDATION 21

THAT all line clearance work be undertaken by ETSA.

However it is additionally recommended:

#### RECOMMENDATION 22

THAT ETSA submit its general standards and procedures for line clearance to the South Australian Bushfire Prevention Council

and, on their advice, these be authorised by Government as a part of a State bushfire prevention plan.

The Council will then have the responsibility to review these standards and their compatibility with other bushfire risk and hazard reduction measures. Questions should be raised as to whether ETSA's standards are sufficiently effective, whether they allow appropriate flexibility in application to local circumstances and whether the consequent bushfire risk reduction justifies the cost to electricity ratepayers and the impact on the environment. When agreement has been reached with ETSA, the standards etc may be recommended to the Minister for endorsement as a Government bushfire prevention policy.

This process of negotiation may, if necessary, be aided through the commissioning of special studies. The Working Party has every confidence that these negotiations will succeed in producing policies which are acceptable both to ETSA and to the Government as a bushfire prevention measure. This is important since it allows ETSA to remain fully responsible and accountable to the public for reducing the risk of bushfires being started by powerlines.

Within the standards and guidelines endorsed at State Level must be conditions which acknowledge:

- \* variations in policy permissible to accommodate local circumstances, and
- \* the reality that backlog situations in the maintenance of standards will inevitably occur.

It is therefore further recommended:

#### RECOMMENDATION 23

THAT detailed plans for line clearance and the extent of backlogs of line clearance be tabled by ETSA at the proposed District Bushfire Prevention Committees for co-ordination and inclusion into District bushfire prevention plans.

Here again there must be an emphasis on consensus and co-ordination. It may, for example, be possible to work out ways in which different Authorities can share resources locally.

It is realised that this process is time-consuming. In some cases the bushfire season will arrive before agreement has been reached. For this reason it has been essential to recommend that ETSA's district supervisors have the recourse to turn power off in circumstances which they assess to be unsafe. Without this it is impossible to assert that ETSA has a full public accountability for the safety of its powerlines. This subject is discussed in more detail in Section 5.3.8.

### 5.3.2 Tree Planting Control

ETSA is working on a classification of tree types in order to specify minimum distances from existing overhead powerline to where certain trees may be planted. Once this work has been developed to the point that it is acceptable to various horticultural groups, it should be widely publicised to encourage landowner responsibility.

ETSA has also been prepared to offer a replacement plant of a suitable type for trees which it has removed.

The planting of inappropriate trees is and will continue to give rise to a significant component of the cost of electricity. In view of this, the Working Party supports the proposal that a policy to control tree planting be adopted. Landowners and occupiers should be discouraged from planting or permitting to grow trees which clearly contravene a published classification standard. They should be required to remove such trees or in default, ETSA should have power to remove the tree at cost to the landowner. When a tree has already intruded into the clearance space the requirement on the landowner should be to notify EYSA rather than to cut or remove the tree. To avoid a retrospective penalty, such power should not be applied to the first cycle of line clearance following adoption of this policy. As part of the notification of this line clearance, landowners should be advised that new trees planted or permitted to grow in the future, may be removed at their expense.

Except for a general review at the South Australian Bushfire Prevention Council, the practical application of this policy should be a matter for ETSA and landowners.

### 5.3.3 Ground Fuel Reduction

As discussed, ground fuel and dry grass in particular is a necessary ingredient in any fire start associated with powerlines. In high winds, however, ignition may occur up to 100 metres from the line with even a low amount of fuel. Prevention of fire starts would require a virtual bare earth policy over such a large area that it is judged by the Working Party to be environmentally unacceptable.

Thus a ground fuel reduction policy associated specifically with powerlines is not envisaged.

For the more general purpose of fire protection, ground fuel reduction is seen as a necessary strategy. This is discussed in Section 3.2.2.

### 5.3.4 Spacers

Following the Ash Wednesday 1983 fires ETSA has installed 176 000 spacers. They are believed to be effective in eliminating clouting but only in conjunction with effective line clearance.

This should be regarded as a technical matter and ETSA alone should have responsibility.

In this regard ETSA should take note of the bushfire hazard maps which are the subject of Section 3.3.

### 5.3.5 Circuit Breaker Adjustment

Since 1983, ETSA has adopted a policy of adjusting circuit breakers in certain rural 'one shot lock out' during the bushfire season. Circuit breakers detect line faults and cut off power. Normally they are set to attempt to reclose automatically a number of times before staying locked out. In the one shot lock out mode,

intermittent faults lead to more power outages, requiring linesmen to attend. But protection is afforded for some of the faults which may otherwise start fires.

This is also a technical matter and only ETSA can take responsibility. However, negotiations should continue to take place with the operators of facilities which require power and also contribute to bushfire safety or counter disaster activities such as the water supply and hospitals. The places for such negotiations are the proposed Regional and District Bushfire Prevention Committees.

#### 5.3.6 Insulated Conductors

Recent technology, as yet virtually untried in Australia, allows the multiple conductors to be combined in a single overhead insulated cable. The cable is more expensive than the XLPE cable which is used for underground systems since it must have added strength. But it does offer potential to overcome the majority of bushfire risk factors associated with the multiple overhead conductor systems.

Given that these cables are relatively unsightly and that they are likely to require replacement if subjected to fire, they are no panacea. They may have a role as a short term measure on a limited number of spans affected by significant stands of trees where the line clearance standards are inappropriate.

This is a matter for ETSA at this stage until the systems have been installed and tested and costs are better identified.

#### 5.3.7 Line Patrols

A practice, which has been instituted by ETSA, is to patrol lines known to be substandard in respect of tree clearance on extreme fire danger days. This practice is commended by the Working Party which noted that in some districts of Victoria, through local initiative, CFA volunteer fire brigades co-operated in this task.

Thus proposals for line patrolling on days of extreme fire danger should be developed within ETSA at a district level in co-ordination with any other hazard watching patrols. This coordination should be sponsored by the proposed District Bushfire Prevention Committees.

#### 5.3.8 Switching Off Power

Four variations need to be noted in regard to any policy for switching off power.

- \* De-energising lines in areas through which a bushfire is burning decreases the risk of damage to the line from arcing in the ionised gases of the flames. ETSA currently adopts this policy when appropriate.

The Working Party endorses this policy on the grounds that, in safeguarding the lines, the period of interruption may actually be reduced.

- \* If, on inspection, a line is found to be damaged or in imminent risk of damage due to very high wind, interference from trees or any other cause then as localised an area as the switching allows may be isolated to eliminate the risk of bushfire. As a policy this gives more reason to patrol lines on days of extreme fire danger. ETSA undertook a trial of this policy on 14 January 1985 which has been useful to the Working Party for evaluation purposes. In this case some 190 consumers were without power for approximately 4 hours. The most significant problem was that the loss of power contributed to a subsequent local failure in the public water supply.

Given the legal position where ETSA may be subject to litigation if an officer fails to take action which would have prevented a fire, some policy to switch off power in these circumstances would appear necessary. In formalising this policy ETSA should be required to publicise it and negotiate with any consumer who expresses concern. Particular attention is required for the operators of facilities of importance to bushfire protection or counter disaster support. In this case joint planning is

appropriate and should ideally take place at the proposed District Bushfire Prevention Committees.

- \* District Committees may go further and agree with ETSA to the automatic switching off of power on extremely high bushfire danger days in limited pockets in which line clearance is known to be substandard.
- \* With the agreement of a Regional Bushfire Prevention Committee, this approach may be widened to require switching off of all or a large part of the electricity distribution in a region should the weather conditions become so extreme as to justify this step. These conditions may be expected to be very infrequent.

This is not current ETSA policy.

The difficulty here is the fact that, unless bushfire danger conditions soon become low, eg heavy rain occurs, ETSA would be unwise to reconnect lines until they had been inspected and cleared of debris. Otherwise the act of reconnection has a possibility of starting a fire. In practical terms, this may take 24 hours or longer if over a weekend or public holiday. This will compound the impact on other fire protection or counter disaster support facilities and may not be readily accepted by consumers generally.

Because the Working Party has not been able to study the impact of such proposals, it cannot support a policy to switch off power to large areas on the presumption that an unacceptable risk exists. However, the Electricity Trust should continue to examine the advantages of such a policy as an element in the hazard reduction program. Certainly, until other hazard reduction measures are in place, this policy may serve as an interim measure. The Working Party proposes that the implementation of this policy in specific locations should be examined by the Regional Bushfire Prevention Committees who would be in a better position to make an overall assessment of the various hazards and the best methods of reducing the risk on a seasonal basis.



In summary, it is recommended:

#### RECOMMENDATION 16

THAT ETSA prepare a draft policy on the switching-off of mains to cover all circumstances where the powerlines cannot be reasonably considered to be safe from a risk of starting a major bushfire. This draft policy should be submitted to the proposed Bushfire Prevention Council for advice to the Government on its inclusion in State bushfire prevention plans. Thereafter intentions to apply the policy should be advised to the Regional and District Bushfire Prevention Committees.

#### 5.3.9 Underground Construction

W D Scott (1984) provides a significant analysis of the subject of underground installation of power distribution. The Working Party is satisfied that this form of construction renders electricity distribution as risk free in terms of bushfire starts as is possible. The main disadvantage is cost.

The publication of the W D Scott report by ETSA has served a very useful purpose in the public arena. Arguments that ETSA had misrepresented cost estimates in order to justify doing nothing have abated. A more realistic appreciation of the adverse environmental impacts from undergrounding construction work has arisen. Previously underground powerlines were promoted perhaps more strongly on environmental grounds than on bushfire prevention grounds. This tended to confuse the central issue.

Several different circumstances must be considered in determining policy; new extensions, existing overhead lines, systems reinforcement and service lines. Each of these raises different issues as detailed in the following Section.

## 5.4 UNDERGROUND CONSTRUCTION OF POWERLINES IN PARTICULAR CIRCUMSTANCES

### 5.4.1 Underground Construction of New Extensions

The principle which guided the Working Party in respect of extensions to supply electricity to new applicants is that of consistency with the principles of planning which exist to regulate new development generally. Through the planning process, policies are defined to ensure new development does not give rise to future community difficulties. These policies are assigned to zones which are published and authorised through the development plan process under the Planning Act. Developers are then required to comply with policies which apply to the area in question, bearing the costs which result.

In respect of 11 kV and low voltage powerlines, the Working Party is satisfied on the evidence of various investigations as summarised in W D Scott (1984), that within a zone of high bushfire hazard, underground construction of powerlines should be mandatory. In this case the allocation of costs should be regulated by ETSA's mains extension policies. These policies were designed for overhead construction conditions. A brief examination by the Working Party has shown that they are adequately applicable to most circumstances involving underground construction. Some potentially difficult areas are apparent. The Working Party has not attempted to identify all such difficulties nor to resolve them. To do so without a thorough analysis of the operation of the entire range of mains extension policies is to invite introduction of inconsistencies and obstacles to a later rationalisation of these policies. This is a matter requiring the attention of the management of ETSA.

The implementation of the policy requiring all new 11 kV and low voltage powerlines to be underground in high bushfire hazard areas is beginning to be undertaken by ETSA. This is commended but now the policy objective is bushfire prevention. It is therefore desirable, on the establishment of the South Australian Bushfire Prevention Council that the policy be formalised as part of a State bushfire

prevention plan and included in relevant Supplementary Development Plans under the Planning Act.

The Working Party therefore recommends:

#### RECOMMENDATION 13

THAT a requirement for all new powerlines in areas of high bushfire hazard to be constructed below ground be incorporated into Development Plans under the Planning Act. Until maps can be prepared to define the necessary policy areas and the statutory process of consultation is completed, it is recommended that ETSA continue to apply such a policy on its own judgement.

#### 5.4.2 Underground Replacement of Existing Overhead Powerlines

The existing overhead powerlines were constructed in accordance with the then prevailing standards. It has now been established that this is an unsuitable form of construction for at least the most highly bushfire prone areas.

W D Scott (1984) reported that any plan to replace existing powerlines should be on the basis of an expenditure of not more than \$6 million per annum (1984 values). The Working Party accepts this indicative magnitude, being related to ETSA's capacity to undertake the work.

In regard to the total extent of this work, W D Scott (1984) suggested that as much as \$120 million (1984 values) may be justified (20 years at \$6 million p.a.). On the basis of some more recent investigation by ETSA, the Working Party now believes that much less may be justified. This also depends on the effectiveness in fire risk reduction of alternative measures outlined in this report. But it can be positively concluded:

#### RECOMMENDATION 14

THAT a program for underground replacement of existing overhead powerlines in high bushfire hazard areas in order of priority is

justified to the extent of \$6 million per annum (1984 values) for a number of years, being not less than five (5). This program needs to be reviewed annually in conjunction with all other bushfire prevention measures.

In practice, and after discussion with Local Government in:

- \* the Mt Lofty Ranges
- \* the South East, and
- \* Clare

it was concluded that the vast majority of underground replacement which can be justified occurs within the Mt Lofty Ranges region.

Section 6.3 of this report presents a proposal for the recovery of these costs. It emphasises the need to spread the burden of costs to avoid excessive penalties for individuals while at the same time to reflect the degrees of benefit attained by different stakeholders.

If an underground replacement program is to be successfully mounted, recovery of costs must be regulated by statute. Voluntary funding will seldom succeed where groups of residents are expected to come to a collective arrangement. Any success under this arrangement is most likely to be a measure of the perceived amenity value rather than the original objective, to reduce bushfire risk.

The problems in arranging by statute to recover costs from such diverse beneficiaries are the subject of Section 6.3. Suffice it to state here that any such arrangements should be required to gain Government approval on the advice of the South Australian Bushfire Council.

#### 5.4.3 Underground Construction of Systems Reinforcements and Relocations

Systems reinforcement is at present undertaken by ETSA at its own cost to cater for a general increase in power consumption in an area on properties already served or the cumulative effect of many small extensions.

The question is whether this should be dealt with as a new line, constructed underground at cost to ETSA or as an 'existing' line requirement and eligible for access to the bushfire prevention funds.

If ETSA pays, then it may be argued that all power consumers will pay for what is a bushfire prevention measure. On the other hand such a line is a form of new development which should comply, at the cost of the developer, with planning policy. The fact that ETSA is administratively unable to uniquely identify the beneficiaries and recharge them, is simply one of the practical realities of a public utility. The integrity of the application of planning controls and the restriction of special bushfire prevention funding to risk reduction as opposed to limiting risk increases associated with new works is the logic which appealed to the Working Party. This approach is also consistent with the fact that, when the underground replacement of existing lines is completed, there will be no alternative for ETSA than to meet the costs of new underground systems reinforcements.

The same argument may be applied to lines which are relocated for some reason. The one difference in this case is that, in many instances, a second party will have requested that the line be relocated. The requirement for the replacement line to be underground should be viewed as a separate matter from the basis on which ETSA and the second party negotiate to share or allocate costs.

Thus ETSA should be subsidised by those who benefit from reduced bushfire risk for each span of existing overhead line which goes underground. This gives ETSA incentive to undertake reinforcement along the alignment of existing overhead lines which have been assigned priority for underground replacement. If an existing line is replaced then the fact that ETSA may construct a new line of greater capacity as a reinforcement or even to provide spare capacity to avoid early duplication, does not lessen the value of the project to bushfire risk reduction. Given that ETSA's offer of 50% overstates their financial gains, then the rule for access to the bushfire prevention fund may be kept simple. Reimbursement from the bushfire fund may be limited to 50% of the average annual cost per metre of

the underground lines constructed under this program, applied to every metre of existing overhead line removed.

#### 5.4.4 Underground Replacement of Service Lines

Under ETSA's current policy, when a line is re-constructed underground at the request, say of Local Government, then ETSA has offered consumers a choice firstly of a new underground service point at the property boundary to which they must connect at their own cost. Alternatively, at ETSA's cost, a pole has been installed and an overhead service re-connected to the existing service point.

If poles are unacceptable to Local Government, they must negotiate with ETSA's consumers to accept an underground service.

When an existing line is placed underground as a bushfire prevention measure then the service line too must be underground. ETSA's policy would inflict on each consumer a variable cost, which could be a number of thousands of dollars in some rural situations or as low as one to two hundred in suburban areas.

However, as explained in Section 6.3.2, the consumer may be required by Local Government to enter into payment of levies for his share of the powerline in the street. The Working Party concluded that the service line should be deemed to be covered by that specific component of the cost recovery process.

Two difficulties arise from this proposal:

- \* It is inconsistent with ETSA's: existing service policy. This is capable of resolution by considering that this particular underground replacement program is for the purpose of bushfire prevention, not aesthetics .
- \* ETSA's offer to pay 50% of the cost of undergrounding was made on the assumption that service lines would not be included in the undergrounding scheme.

ETSA has strongly reiterated its position on this matter, but the majority of the Working Party considered that service lines should be included and recommends that ETSA prepares its more detailed proposals for underground replacement of overhead powerlines on this basis.

#### 5.4.5 Customers' wiring

Property owners often distribute electricity around their properties with overhead wires. This wiring is constructed to standards which are regulated by ETSA. Thus in the case of new wiring being installed by customers, a revision of these standards to cover fire risk reduction in bushfire prone areas is an appropriate mechanism.

Again it will be the existing overhead wiring which cause difficulty. However, particularly in the case in which it has been justified for ETSA to place its own line and the customers service line below ground to reduce the risk of fire, then it is illogical to allow the risk which may be associated with the customers wiring to persist. The Working Party considered that ETSA should insist on these customers meeting an equivalent standard of fire risk reduction within some reasonable period after its own mains have been placed below ground. Costs for customer's wiring should remain the responsibility of the customer.

#### 5.4.6 Underground Replacement Project Management

ETSA is clearly the appropriate body to carry out the undergrounding program.

Complete project management will involve:

- \* planning and investigation of priorities,
- \* presentation and negotiation for approval and funding through the proposed South Australian Bushfire Prevention Council,
- \* supervision of all aspects of engineering design and construction, and
- \* cost accounting for cost control and reimbursement purposes.

The aspects which require new skills for ETSA, are the trench excavation and restoration phases. This has arisen, since in new development work, ETSA have access to the 'common service trench'. ETSA's current approach to undergrounding of existing lines is to place the responsibility for trenching elsewhere, usually Local Government or the applicant.

However, for efficiency on such an extensive program, integrated project management should reduce costs even given ETSA's initial problems with the acquisition of new skills.

#### 5.4.7 Pilot Underground Powerline Construction Program

ETSA has indicated that its actions to implement a pilot underground scheme have to date been unsuccessful due to difficulties in arranging financial contributions in areas where underground replacement has clear priority. When this report is made public and the advantages of underground replacement confirmed then it is hoped that Local Government in particular may be persuaded to co-operate. By one means or another it is important that a pilot underground construction project be undertaken.

The Working Party recommends:

##### RECOMMENDATION 15

THAT ETSA continue to negotiate with landholders and Local Government on the best available terms to proceed with a pilot underground powerline construction scheme of a sufficient length in a high bushfire hazard area to provide more detailed information on costs and environment impacts in a 'typical' area. This information should be used to support approval submissions and environment impact statements (if required) for a larger scale program to place existing powerlines underground.

As suggested, the aesthetic superiority of underground powerlines may be more realistically judged from the record of an actual project. The impact of the clearance of trees required for underground construction will then be demonstrated. This knowledge may help the



community and involved Authorities to better understand the impacts.

## 5.5 PUBLIC ACCOUNTABILITY

### 5.5.1 Action Taken by ETSA

ETSA is to be commended for the many initiatives it has taken following Ash Wednesday 1983 in particular. A summary of these is included in Appendix 1.

Through these initiatives it is apparent that ETSA has undertaken a large measure of responsibility. To date ETSA has had no alternative than to attempt to come to terms directly with the bushfire risk reduction problem. There has been no other organisation to which the problem could be referred.

The Country Fire Services (CFS) has also undertaken some initiatives but, these have been centred on fire suppression. The CFS has never seen itself having a role in regulating the activities of organisations like ETSA. Indeed the present Country Fires Act is not supportive of that role.

The progress made by ETSA in bushfire risk reduction indicates that it is practical for ETSA to remain, in large measure, publicly accountable. They own the lines and, unquestionably, have sound technical ability in the distribution of electricity.

### 5.5.2 A Bushfire Prevention Organisation

In exercising public accountability for the bushfire prevention aspects of electricity distribution, ETSA has had some difficulties.

\* Firstly, it has become necessary for ETSA to assume, in part, the role of a bushfire prevention authority. This is most difficult for ETSA. In negotiating, as it must, with community groups and environmentalists in ETSA has had to represent often conflicting objectives covering:

- engineering soundness

- the impact of cost recovered through electricity tariffs on the State economy, and
- bushfire hazard management

A strong and independent Bushfire Prevention Council will simplify ETSA's position, by providing an external forum for the inevitable public debate.

- \* If a large scale underground replacement program is to be mounted with costs being recovered in part from landowners, then a new revenue recovery mechanism must be established. In that the basis of this revenue is bushfire prevention, it should be disassociated from ETSA. The existence of a South Australian Bushfire Prevention Council makes sense in this regard.

Furthermore, responsibility for these costs is recommended by the Working Party to be one for landowners. This would create a practical difficulty for ETSA which deals exclusively with occupiers not owners in their current revenue system.

- \* Finally, it is advisable that an oversight of all bushfire prevention and protection activities be established for reasons of balance and efficiency. Without this, ETSA could, for example, become comfortable with a very high standard of bushfire risk reduction at the expense of all South Australians through their electricity accounts. Meanwhile other hazard managers who lack motivation or this fund-raising ability may achieve little and allow dangers to persist. The net effect would be a lesser standard of fire protection than if the same total funds were spent in a more balanced way.

It is not suggested here, that ETSA fund other bushfire hazard programs. Rather it is suggested that these issues need to be debated and reviewed within a permanent organisational framework established for that purpose.

### 5.5.3 Recommendations on the Responsibility of ETSA

Section 4.6 contains a proposal for the establishment of an

organisational structure for co-ordination of bushfire prevention and protection in South Australia. This is centred on the creation of a South Australian Bushfire Prevention Council. Subject to these recommendations being implemented, the Working Party makes the following recommendations concerning the public accountability of ETSA.

#### RECOMMENDATION 17

THAT ETSA undertake to prepare and to maintain a plan for the reduction of bushfire risk associated with powerlines and including:

- \* line clearance standards
- \* line clearance program schedules and a description of the extent of backlog work
- \* spacer standards and degree of achievement of those standards
- \* circuit breaker adjustment policy and impact on organisations which contribute to fire safety or counter disaster plans
- \* line patrols on days of extreme fire danger
- \* policy on, planned extent of application of and expected impacts from switching off power
- \* underground construction of new power lines in high bushfire hazard areas
- \* the replacement where justified of existing overhead powerlines with underground mains in high bushfire hazard areas
- \* pilot studies and research into:
  - underground construction
  - insulated conductors

and to table the plan before the proposed South Australian Bushfire Prevention Council or, in part, before the proposed Regional and District Bushfire Prevention committees.

RECOMMENDATION 18

THAT ETSA shall at all times retain responsibility for the bushfire risk arising from its electricity distribution. This must remain paramount while negotiation of plans with the Bushfire Prevention Council or its Committees should be viewed as a forum in which ETSA can pursue elements of an improved plan requiring consultation in respect of cost, environmental impact or other implications.

## 6. FUNDING

### 6.1 FUNDING PRINCIPLES

Inherent in many of the proposals of this report is the question of cost and who should meet those costs.

In most cases, costs are identified quite approximately. This is partly because the Working Party has pursued costs only to the extent that their impact on the general feasibility of the proposals could be comprehended. It also reflects the reality that most of the proposals allow for extensive ongoing processes of review. Those proposals being made now, should be re-shaped and modified in the light of results actually achieved.

The Working Party is nevertheless required by its terms of reference to report on the

"Responsibility for costs and the means of cost recovery for line clearing and undergrounding programs".

as well as

"In developing its proposals for organisational structures, the Working Party should take into account the broad requirements of bushfire mitigation planning and management".

Thus it was necessary to ensure consistency between the authority and responsibility of the various organisational elements and the principles on which all responsibilities for costs could be established.

A number of principles have guided the Working Party arriving at recommendations on responsibility for costs.

\* Those who receive a direct benefit from a proposal should pay for its costs. This is the 'user pays' principle which inherently gives beneficiaries a realistic appreciation of the

cost of a proposal. Thus it leads them to exert pressure for more or less to be undertaken depending on their perception of a proposal's value.

- \* Given the common law right of individuals to recover damages from those who intentionally or negligently contribute to an injury or loss, then the responsibility for hazard reduction must be extended. It must include not only those who benefit from reduced risk of injury or loss, but also those who may be held responsible for that risk. The benefit to the owners of the hazard will be attained in reduced risk of litigation, reduced requirement for alternative mitigation measures and reduced premium for indemnity insurance. This is the 'liability' principle which acts to shift a responsibility for costs from those at risk to those in a position to manage the hazard.
- \* Where the beneficiaries are either difficult to identify exactly or too many and varied in their value judgements, then the costs should be met through the level of Government whose taxing and electoral base best approximate the beneficiaries. This is the principle, of 'collective responsibility'.
- \* Where a community has developed an established pattern of land use which would be diminished in value by a subsequent development, then the new developer must either pay for measures which reasonably retain the established value or compensate those affected. This is the 'Planning' principle.
- \* Other things being equal, there is an advantage in having the organisation responsible for carrying out a proposal to also pay the cost. This principle of 'autonomous control' promotes cost efficiency, particularly with proposals which require a highly technical and informed management.

## 6.2 BUSHFIRE PREVENTION COUNCIL OPERATING COSTS

### 6.2.1 The Technical and Support Secretariat

The requirements of the proposed South Australian Bushfire Prevention

Council and its Technical and Support Secretariat are outlined in Section 4.8. It has been identified that five (5) staff are required for that purpose.

The Working Party received a submission from the Country Fire Service (CFS) in this regard. In the light of this and an examination of the CFS Corporate Review (CFS,1984) it is concluded that the functions of the Council's Secretariat will only overlap with existing functions of the CFS to the extent of one (1) full time equivalent officer. This is contributed partly from each of the areas of research, publicity and administration.

Taking into account the overlap of one full time equivalent officer, 4 additional full time equivalent staff appear justified.

with this level of staffing, their overhead costs (accommodation, vehicles, expenses etc.) and the expenses of the Council itself (fees for non-government members, travel and other expenses) an annual budget of the order of \$250 000 would be required.

The Working Party recommends:

#### RECOMMENDATION 27

THAT the general operating costs of the South Australian Bushfire Prevention Council should be funded under the same arrangements as the CFS Headquarters.

This complies with the autonomous control principle and avoids disputation in the precise allocation of costs between the CFS and the Bushfire Prevention Council. The CFS was always meant to undertake bushfire prevention, though never in such a defined way. The current contributors to CFS Funds, notably the State Government and insurance companies do pass on costs approximately to beneficiaries and an appropriate electoral base.

Finally, it is noted by the Working Party that the funding of the CFS is part of the agenda for a sub-committee to the Fire Services Co-ordinating Committee. This proposal now made by the Working Party

will allow this sub-committee to include these costs in their review.

#### 6.2.2 Other Government Departments and State Instrumentalities

All those Government Departments and State Instrumentalities represented on the Council will be required to absorb some quite minor costs associated with attendance at meetings of the Council or its Committees and supporting these with information.

Those who already undertake fire prevention and protection planning should find a commensurate benefit in having meetings arranged with those with whom they would otherwise have to negotiate bi-laterally. It is the Departments whose bushfire hazard management has been below standard which will experience increased costs. To assess the likely costs would require an investigation of the current hazard or land management practices of those organisations. The Working Party has not been able to undertake this task.

However, if the concept of the Bushfire Prevention Council is to succeed in the District environment where the greatest requirements will exist, then Government agencies must set the example. Properly researched land and bushfire hazard management plans will be required from all Government agencies with significant land holdings.

#### 4.2.3 Local Government Costs

Again as for State Government Agencies the variation in costs which will be experienced by Local Government will be related to -

- \* the degree of bushfire hazard in their district and
- \* the extent to which they are currently active in administering section 51 of the existing Country Fires Act and liaising with State Government Agencies in their district concerning fire hazards.

A District Council or Corporation already active in this regard has the potential to reduce its costs through new powers to appoint



Volunteer Bushfire Prevention Officers. Most, however, are expected to suffer a degree of increase in their costs.

For this cost, they acquire new powers which will enable them to influence the management of Government Land in their districts. Government Agencies will be required to table their land and bushfire hazard management plans at District Bushfire Prevention Committee meetings. The Agencies will further be required to report the extent of fire prevention action actually carried out.

As rural districts or high bushfire risk districts attend well to their current responsibilities for land clearance notices, the increased cost should represent less than the salary of one officer.

#### 6.2.4 Bushfire Hazard Mapping

This item is included under the operating costs of the Bushfire Prevention Council as a consequence of the conclusion that bushfire hazard mapping is very desirable to support bushfire prevention planning. Furthermore, it is essential to the administration of development planning controls and cost recovery for the underground replacement of existing overhead powerlines.

In the context of policies approved by the Minister of Emergency Services on the advice of the Bushfire Prevention Council, there seems little alternative to State funding under the principles accepted by the Working Party.

The total extent of costs to establish this mapping for the first time could be as high as N million depending on the number of high bushfire hazard areas to which it is extended and possible problems which may arise in combining the map overlays to derive policy areas.

To a large extent this mapping will be included in the ongoing operations of the Departments concerned. Some rearrangement of Departmental priorities may be required to expedite this work. To achieve the required timetable some of the data preparation which would otherwise have been handled within Government Departments may have to be let to contract.

The cost of the hazard mapping needs to be evaluated against other potential uses of the process. The CFS would be able to make use of the fire intensity maps in its fire fighting operations. The digital data base for the mapping would also be usable by the Department of Lands. It is expected, in fact, that the Department of Lands would in time produce a digital data base over the State for its own purposes.

The maps will require revision from time to time. However, most of the initial cost is required to establish the methodology and to prepare data such as slope which does not vary over time. Thus revisions should cost very much less, possibly as little as \$100 000 every three to five years.

### 6.3 UNDERGROUNDING OF EXISTING POWERLINES IN HIGH BUSHFIRE HAZARD AREAS

#### 6.3.1 Funding Options Considered

W D Scott (1984) presented an analysis of the costs of the Electricity Trust of South Australia (ETSA) which indicated that between 30% and 50% of the cost of underground replacement could be justified in terms of economic factors (eg tree-cutting, and the loss of property in bushfires). These costs could be avoided if conductors were underground rather than overhead. The Working Party is of the view that, having regard to the assumptions made, the outcome would tend to be towards the lower end of the range. Thus, in ETSA's public undertaking to accept liability for 50% of the cost of such undergrounding as may be undertaken in the interests of bushfire prevention, there is almost certainly an element of support from electricity consumers generally. This will be reflected in a higher tariff than they would otherwise be required to pay.

The Working Party considered a number of options for raising the remaining 50%, taking into account that:

- \* as a general rule, equity between people will be reflected best where those who receive a service or a benefit are required to pay for it.

- \* ETSA's undertaking would involve electricity consumers generally in a contribution towards undergrounding.
- \* although the distribution of their contribution to State revenues would be different, electricity consumers form approximately the same population as taxpayers.
- \* undergrounding would provide some benefits to the population of the State as a whole but the benefit received by property owners in the areas in which underground replacement is carried out would be much greater in terms of both improved safety and amenity than the benefit received by property owners or residents in other areas of the State.
- \* to the extent that a localised averaging of costs would be appropriate, local government is the appropriate level of government through which that averaging should take place.
- \* local government has a clear responsibility to participate in all aspects of bushfire prevention.
- \* properties immediately adjacent to an undergrounding project will receive the most direct benefit and that benefit is likely to be reflected in the value of the property in the same way that kerbing and guttering provides a benefit and enhances values.

The Working Party considered four funding options against this background and resolved to recommend a four tiered structure for cost recovery on the grounds of equity and manageability. The alternative options are:

- \* ETSA to pay the full cost of undergrounding

This option would spread the cost of undergrounding across all electricity consumers by increases in tariffs to cover the additional costs.

It is difficult to see why inner suburban consumers (who, individually, would make an equal contribution to that of similar consumers in high hazard areas and, collectively, would contribute a great deal more) should bear this additional cost. To place the full cost on electricity consumers would also concentrate the burden on large users of electricity. The loading of electricity tariffs in this way would have undesirable side effects in terms of commercial and industrial disincentives. ETSA's contribution, as nearly as possible, should be neutral in its effects on tariffs. The public undertaking to pay 50% of the cost of bushfire related undergrounding is already generous in this regard.

\* The State Government to Pay the Remaining 50%

This option suffers from similar disabilities to the option discussed above. The General Revenues of the State reflect contributions by taxpayers generally. The benefits to be derived from undergrounding will be derived primarily by property owners in those specific areas which are at risk from bushfires. A contribution of this magnitude from the General Revenues of the State would do nothing to reflect this. Furthermore, it would fail to reflect the role and responsibility of local government in bushfire prevention. This role of Local Government is well established, for example in their contribution to equipment for CFS Brigades, and their role in ground fuel reduction.

\* A Levy on all Landowners in Areas to be undergrounded

This approach comes closest of the three considered so far to the objective of raising funds from those who benefit from the project. By itself, however, it was considered by the Working Party to represent a cruder expression of liability than was necessary.

### 6.3.2. The Recommended Four-Tiered Structure for Cost Recovery

Having considered the three schemes discussed above and some variations on those themes, the Working Party considered the

rationale under which funding could be made equitable and manageable. It was determined that this would require the burden of cost to be as widely spread among the beneficiaries as could be supported in order to limit the penalty on individuals while retaining a relationship to the degree of benefit attained.

The recommended scheme involves the following cost shares:

#### RECOMMENDATION 25

THAT the cost of underground replacement of existing overhead powerlines which is undertaken on the advice of the South Australian Bushfire Prevention Council be recovered as follows:

- \* ETSA, 50%.
- \* the South Australian Government, 5%
- \* Local Government, 25%, calculated by reference to all land holdings in a defined area
- \* Local Government, 20%. calculated by reference to the number of properties immediately adjacent to an actual underground replacement project.

The original basis for this assessment was the W D Scott indication that undergrounding in all bushfire prone and environmentally sensitive areas seemed likely to be achievable by a program of about \$120 million implemented over a period of 20 years at the rate of about \$6 million per year (1984 dollars). The Working Party has noted in other areas of the report that there may well be other priorities for the use of funds which would produce more effective results than undergrounding. Indeed, the W D Scott Report addressed this possibility in a broader way by recognising that no more than 50% of the cost of undergrounding could be justified on economic grounds and the community would have to make judgements on other grounds about the value of the remaining 50%.

The Working Party has considered this aspect of the matter in the light of information in the W D Scott report and more recent investigations carried out by ETSA, and has reached the conclusion

that a program over a minimum of five years, at the rate of \$6 million per annum (1984 dollars) is justified. The justification for extension and the level of such a program beyond 5 years will need to be a matter for ongoing review by the South Australian Bushfire Prevention Council. However, the basis upon which the funding proposal has been developed would be valid even if it were determined that, in many areas presently regarded as possible undergrounding localities, alternative measures of bushfire mitigation were found on further examination to represent better value for money.

The rationale for each tier of the funding proposal is as follows:

ETSA - 50%, public undertaking based on the top end of the range of contributions which the W D Scott Report suggested could be justified on economic grounds.

State Government - 5%, based on two considerations:

- \* the area of land in State ownership in the relevant local government areas which, by itself, would justify a contribution of 2%, as follows

Crown Land - "Exempt Areas - in hectares - by Local Government"

(Information provided by the Department of Lands)

Mitcham	4%
Stirling	4%
Happy Valley	3%
Gumeracha	7%
Mt Barker	1%
Onkaparinga	1%
Willunga	1%
East Torrens	1%
Strathalbyn	1%
Average, weighted by area	2%

- \* the value to the community as a whole of such benefits as lesser demands on emergency services, the aesthetic and tourism related amenity of undergrounding and so on.

Local Government First Component - 25%, recognising the benefits obtained from bushfire prevention by property owners in bushfire prone areas generally, not just those in the places where the risk of fire starts is greatest. Ash Wednesday 1983 underlined the long distance from a fire start that property damage can occur.

Local Government Second Component - 20%, recognising the benefits conferred by undergrounding in terms of amenity and property value increases in respect of properties immediately adjacent to (ie abutting) an undergrounding project. This component also recognises that it is the demand for electricity for these properties specifically which creates the need for underground replacement. Additionally it is proposed that part of this money be directed to the provision of an underground service line from the mains to the consumers point of supply. The fact that, under the existing policy of ETSA, this would be at cost to the consumer, emphasises the importance of this contribution component.

The Working Party envisages the creation of a Trust Account at Treasury into which the State and Local Government contributions would be paid. ETSA would finance the work initially and would draw upon the Fund at convenient intervals to recover 50% of its costs.

Contributions to the Fund would be required annually by the Minister on the advice of the Bushfire Prevention Council after agreement between the Council and ETSA on a program of priorities for the year in question, approximating \$6 million (1984 dollars) or such lesser figure as the Bushfire Prevention Council may recommend.

Individual Local Government Councils would be responsible for payment of two components of the annual contribution calculated on the basis described earlier:

- \* an amount designed to reflect 25% of the annual cost of the program divided among Local Councils in proportion to their

number of ratable properties that lie within a declared high hazard zone. Depending on how extensive this area is finally determined to be and assuming a total program of \$6 million per annum, this amount could represent of the order of \$30 per property per annum for the duration of the program.

- \* an amount designed to reflect 20% of the annual cost of the program divided among Local Councils in proportion to the number of ratable properties past which an overhead powerline is replaced underground in the year in question. Depending on the exact cost and the number of properties involved over the whole program for the year in question, this once-off amount could be of the order of \$1 000 per property where the owner benefits by having the powerlines in the street placed underground.

Whether a Council decides to collect either or both of these amounts directly from their ratepayers or pays its contribution from general revenue (and the method by which they may choose to collect them) is, in the opinion of the Working Party, a matter for each Council to determine. Therefore, the Working Party has recommended legislative authority for the Councils to raise special levies from their ratepayers for this work but envisages that the legislation would not compel them to do so.

As recommended, both levies to be met through Local Government are averaged to lessen the impact of factors not related to the risk of bushfire such as property frontages and local digging conditions. In recovering levies from landholders, Local Government are recommended to consider a similar approach. One variation is to establish a special rate on property value. This would reflect the reduced risk of loss of that property in a bushfire. Further useful provision may be for properties immediately adjacent to a powerline placed underground to pay this levy by instalments over, say, ten years. With provisions such as these, the payments required for an average property may be contained to the order of \$200 per annum at present values.



An alternative approach would be, of course, to write into the legislation a formula for compulsory contributions to be levied directly from property owners for as long as an undergrounding program is being conducted. A variation on this theme would be to regard Local Government as a collection agency for the State Government. The Working Party has attempted to frame its recommendations so as to avoid these suggestions because they fail to recognise the important role and responsibility of Local Government in all aspects of bushfire prevention.

### 6.3.3 Establishment of Levies

Once fire hazard zones have been declared:

- \* ETSA submits to the Bushfire Prevention Council for Minister's authorisation a scheme for undergrounding designated mains and service lines in declared zones. This submission will need to be made well before the commencement of the financial year in which the underground replacement is to be carried out.
- \* The scheme sets out:
  - details of the proposal including the portion of the area and streets or roads that will be benefited thereby,
  - particulars of the manner in which the scheme is to be financed including the manner in which the costs are to be recovered
  - the estimated cost of the scheme in the declared zone.
- \* Following consideration by the Council and acceptance by the Minister, the Minister gives notice in writing to the local government councils affected by the scheme asking for comments within 8 weeks .
- \* After taking account of responses and the advice of the Bushfire Prevention Council, the Minister authorises the final scheme by notice in the Gazette and advises individual Local Government Councils of the levies to be raised in the following financial

year and paid into the Treasury Trust Account by 31 May in that year.

- \* The cost of recovery shall be met by Local Government Councils. If they choose to collect levies from land owners at the time that their general rates are collected, they will have the benefit of interest on moneys raised earlier than the due date.
- \* Where a Local Council decides to collect a levy from those in the streets in which lines are placed underground then it may choose to allow this to be paid in installments over a number of years. In this event, a case exists for an approach to be made to the Government to exempt borrowings made in this regard from the Council's borrowing limitations as set out in the Local Government Act.
- \* Moneys collected specifically for programs of placing existing powerlines underground shall only be used for that purpose.

#### 6.4 NEW POWER LINES REQUIRED BY POLICY TO BE PLACED UNDERGROUND

This has already been identified in Section 5.4.1 as requiring consistency with planning principles. ETSA's current mains extension policy reflects this and requires the additional cost of underground construction to be met by the applicant for the extension. In that respect, this policy embodies the 'user pays' principle which may act to discourage development in bushfire prone areas. For the development which does occur, this policy also correctly allocates the cost to the subsequent land owners who are likely to perceive an added amenity value from underground power lines.

Thus the Working Party recommends:

#### RECOMMENDATION 26

THAT where a new powerline is required to be placed underground as a bushfire prevention measure, then the contributions of cost between ETSA and the applicant for the new service or services should be the same as if the applicant had requested an underground powerline.

## 6.5 ALTERNATIVE APPROACHES FOR REDUCING THE BUSHFIRE RISKS OF POWERLINES

These are discussed in detail in Section 5.3 where it is suggested that they should be the responsibility of ETSA. The most significant of these is the line clearance program. Currently the budgetted cost is more than \$8 million per annum, though this could be halved in a few years when the backlog of work has been eliminated. This cost is currently met by ETSA. The Working Party could see no reason to vary this and considered:

### RECOMMENDATION 24

THAT, with the exception of costs recovered for the removal of unsuitable trees (Recommendation 9), all other costs for line clearance should be met by ETSA.

The other approaches already adopted by ETSA or recommended in this report, with the exception of undergrounding, are also indicated in Section 5.3 as requiring ETSA to be responsible. In leaving the costs generally with ETSA, recognition is made of the principles of liability and autonomy in cost control. The requirement for ETSA to table these plans for review at the proposed Bushfire Prevention Council or its Committees adds the necessary element of collective responsibility.

## 6.6 BUSHFIRE RISK REDUCTION NOT RELATED TO POWERLINES

### 6.6.1 Public Education Programs

These are expected to form part of the strategies to:

- \* reduce fire starts (see section 3.2.1)
- \* improve fire protection for existing properties (see section 3.2.5)

In both respects, the CFS have current programs for which the programmed expenditure for 1984/85 is \$103 000. For this reason and the reasons given in section 6.2.1 in respect of the Bushfire

Prevention Council, continued funding under the existing provisions for the CFS is appropriate. In this regard, the Working Party makes no judgement concerning the level of funding compared with the current CFS public education budget. Until the Bushfire Prevention Council has developed a complete bushfire prevention plan and has reviewed the role of public education within that plan, no indication is possible concerning the level of costs.

#### 6.6.2 Other State Programs

There will no doubt be other bushfire risk and hazard reduction programs initiated by or supported by the South Australian Bushfire Prevention Council (eg hazard reduction teams - Section 3.2.4). In making recommendations to the Minister in support of these, it will be necessary for the Council to propose the level and source of funding for such programs.

#### 6.6.3 Research

The research detailed to the Working Party by the CFS submission comprises programs for

- \* Fire behaviour
- \* Fire behaviour modelling
- \* Determination of the impact of bushfires of varying intensity on people and buildings
- \* Determination of the impact of bushfire on vegetation types both during and after the fire.
- \* Fire impact modelling to enable testing and evaluation of building systems and materials and life protection systems

As can be seen, these pertain to fire prevention, protection and suppression. Research in these areas has been promoted as desirable in the findings of a number of enquiries, and the CFS and other interstate organisations have made a modest start.

For an improved response under existing funding arrangements, the CFS would be required to contribute to any joint research undertaken with other authorities as well as meeting, as it does already, the full

cost of the local research needed to develop techniques specific to the South Australian environment. where a research program has benefits to a number of States, the problem of negotiating and joint funding can lead to delay and confusion in the aims of the research.

There is a clear role here for the Commonwealth. A National Bushfire Research Fund administered by the Commonwealth with State participation would be able to define objectives and priorities and provide a central supervision of the progress of research projects. Accordingly, the Working Party makes the following recommendation.

#### RECOMMENDATION 31

THAT the State Government canvass other States and, preferably jointly with other States, make an approach to the Commonwealth Government for the establishment of an Australian Bushfire Research Fund to be funded by the Commonwealth Government and administered by an appropriate Commonwealth Department in consultation with State bushfire prevention and protection agencies.



## 7. LEGISLATIVE REQUIREMENTS

### 7.1 ACTS REQUIRING AMENDMENT

A major new element in the proposals of this report is the establishment of the South Australian Bushfire Prevention Council, the Regional and District Bushfire Prevention Committees and Bushfire Prevention Officers. It would be possible to achieve this under its own separate legislation or by provisions incorporated in the Country Fires Act 1976.

Since the Working Party considers that the Council ought to be an advisory body to the Minister requiring his approval for all matters including regulations or legislative changes it follows that it should be incorporated under the Country Fires Act. This would appear to be logical since the fire prevention area is closely related to fire fighting which is already dealt with under that Act. The fact that it is recommended that the Chairman of the South Australian Bushfire Prevention Council will also be the Director of the Country Fire Services and the full-time Executive Chairman of the Country Fire Services Board is an added reason for recommending that the Council be set up within the existing legislation, namely the Country Fires Act.

Thus the Working Party recommends:

#### RECOMMENDATION 8

THAT Legislation be incorporated in the Country Fires Act 1976 for:

- \* the creation of the South Australian Bushfire Prevention Council and Regional, District and Local Bushfire Prevention Committees,
- \* the appointment or designation of Bushfire Prevention Officers by Local Government Councils subject to a schedule,
- \* the collection of levies from Local Government for bushfire prevention purposes as defined by schedule.

An outline of the provisions required is given in Section 7.2.

This act would, however, be an inappropriate place for specific provision of powers for ETSA, for example, in the area of line clearance. Therefore the Working Party considered:

RECOMMENDATION 9

That the Electricity Trust of South Australia Act, 1946-1980 requires amendment to:

- \* establish that ETSA is responsible for line clearance
- \* give ETSA power to enter land to carry out line clearance or to reconstruct service lines or mains
- \* give ETSA power to disconnect electricity where a powerline is damaged or in imminent risk of damage
- \* provide that, after a nominated date, landowners and occupiers will have a responsibility not to permit unsuitable trees to grow beneath or adjacent to existing overhead powerlines where such trees are in contravention of a published schedule of tree varieties and their allowable distance from an overhead powerline.
- \* give ETSA power to recover the cost of removal of such trees upon default by the landowner.
- \* provide that landowners or occupiers notify ETSA of trees which have intruded into the clearance space and not to attempt to cut the tree themselves.

A further significant element in the proposals of this report is the involvement of Local Government in collecting revenue for Bushfire Prevention. This is best achieved through legislation. In this case the Working Party considered:



## RECOMMENDATION 10

THAT the Local Government Act be amended to empower Local Government to recover funds levied under the Country Fires Act from Local Government ratepayers under conditions determined by Local Councils.

It is additionally proposed that those controls over new development which are required for bushfire prevention and protection be exercised under the Planning Act. This Act is sufficiently well framed for the control of many aspects of new development that it can be applied to bushfire prevention and protection without further amendment.

## 7.2 THE COUNTRY FIRES ACT

7.2.1 Establishment of the SA Bushfire Prevention Council

The major amendment to this Act will be the provisions required to establish the South Australian Bushfire Prevention Council. The membership, term of office, and quorum of the Council will need to be provided for in the legislation.

The functions of the Bushfire Prevention Council, as described in Section 4.7 should be provided in some detail in the Act.

7.2.2 Regional, District and Local Bushfire Prevention Committees

The amendment will provide for the establishment of District Bushfire Prevention Committees and Regional Bushfire Prevention Committees. Again the Act will provide for membership, term of office, quorum etc of these Committees. The functions of District Bushfire Prevention Committees should be provided in some detail and in broad terms should be as described in Section 4.6.3

The requirement for a District or Region to have a Bushfire Prevention Committee shall be gazetted in a schedule by the Minister of Emergency Services on advice from the Bushfire Prevention Council.

The Chairman of a District Bushfire Prevention Committee will be a representative from the Local Council. The amendments should also set out in general terms the functions of Regional Bushfire Prevention Committees which would be largely those of reviewing the consistency of bushfire prevention in the Region, reviewing the effectiveness of District Bushfire Prevention Committees and liaising with the South Australian Bushfire Prevention Council. The regions will correspond with fire control regions as set out under section 20 of the Act. The Executive Officers of the Regional Advisory Committees shall be the Regional Officers of the Country Fire Services (CFS), who shall also be members of those committees.

District Bushfire Prevention Committees should be enabled to establish more localised Bushfire Committees where necessary. The District Bushfire Prevention Committee shall determine which of its functions are to be carried out by a more localised Bushfire Committee if one is established.

#### 7.2.3 Fire Prevention Officers

The Country Fires Act amendments should also provide for the appointment of fire prevention officers by all Local Councils involved in rural land management. It is recommended that a similar obligation be placed upon State Departments and Agencies by means of a Government Direction. The functions of fire prevention officers should be set out in the Act and these would be broadly to co-ordinate the preparation and ensure the implementation of bushfire prevention plans for the Local Councils. In addition the amendments should provide for Local Councils to appoint volunteer fire prevention officers where necessary to participate in the development of fire prevention plans and to provide extra resources for the identification of bushfire hazards.

#### 7.2.4 Hazard Reduction Plans

As noted above fire prevention officers will prepare plans in respect of hazard reduction for private and local government land for submission to the District Bushfire Prevention Committees. The amendments should also provide that State Government Departments and Agencies should also prepare plans to be submitted to the District

Bushfire Prevention Committees. The complete plan for a district will then be forwarded to the Regional Bushfire Prevention Committee or to the CFS Regional Officer if there is not a Regional Bushfire Prevention Committee in existence.

Once District or Regional Bushfire Prevention Committees have completed plans in respect of reduction of bushfire hazards either the Local Councils or the Bushfire Prevention Council ought to be empowered to publish a notice in the Government Gazette and in a daily newspaper circulating generally throughout the State, advising that such plans are available for inspection during ordinary office hours at the office of the Local Council. It may also be appropriate to provide for the giving of notice to the owners of all land affected by the plan.

#### 7.2.5 Power to Levy Funds

On the advice of the South Australian Bushfire Prevention Council, the Minister of Emergency Services should be empowered in the legislation to levy funds from Local Government in high bushfire hazard areas (delineated in the schedule to the Act) to enable bushfire protection programs, such as the undergrounding of powerlines, to be carried out.

#### 7.2.6 Powers Related to Electricity Distribution

The Minister of Emergency Services should also be empowered to determine priorities in relation to the underground replacement of powerlines on advice from the South Australian Bushfire Prevention Council.

The amendments to the Country Fires Act should provide for the Minister to authorise electricity line clearance standards on advice from the Bushfire Prevention Council and to require the Electricity Trust of South Australia (ETSA) publish these by means of regulations.

The Working Party is also of the view that there should be a process for resolving disputes between ETSA and land owners in relation to line clearance. The amendments to the Country Fires Act should provide for such a process. Accordingly a land owner affected by a line

clearance decision of ETSA should be able to refer the matter to the appropriate District Bushfire Prevention Committee. Both the land owner and a representative from ETSA should be able to appear personally before the committee and/or make written submissions to it.

It is recommended that no right of appeal be allowed from the decision of a District Bushfire Prevention Committee.

#### 7.2.7 Other Affected Provisions of the Country Fires Act

Quite apart from the matters raised above the following provisions of the Country Fires Act will require specific amendment:

- \* Section 7 - it is probably appropriate to place the obligation on State Government Agencies with land holdings or risk contributing assets to provide bushfire prevention plans under this Section.
- \* The 1984 amendments to Section 9 and 11 changed the existing Country Fire Services Board into a smaller entity. The proposals of this report require that this change be retained with one further variation requiring the Chairman to be the Director of the Country Fire Service, as noted below.
- \* Section 16 will need amendment since the Country Fire Services Board should not be empowered to advise the Minister about matters concerning the South Australian Bushfire Prevention Council.
- \* Section 18(3) will need to be amended to provide that the Director shall be the Executive Chairman of the Board.
- \* Section 51 will require amendment to empower Local Government only and not the Board to request land to be cleared.
- \* The regulation making powers in Section 68 of the Act will need to be amended to provide for the additional matters raised earlier.

### 7.3 THE ELECTRICITY TRUST OF SOUTH AUSTRALIA ACT

#### 7.3.1 Maintenance of Line Clearance

This Act should be amended to empower ETSA to enter onto private land for both inspection and line clearance purposes. The detail in relation to this should be provided by means of regulations. These regulations should enable ETSA to require a land owner to remove dangerous vegetation and where the land owner fails to do so to enter the land and remove it itself. The right of ETSA to enter onto private land for inspection purposes could be exercised at any time. However, the right to enter private land for line clearance would, except in case of emergency, only follow a decision of a District Bushfire Prevention Committee in favour of ETSA. The regulations should provide for appropriate notice to be given by ETSA but to enable it to carry out the work without notice in case of an emergency. They should also provide for agreement between ETSA and land owners in relation to removal of vegetation. ETSA should also be empowered to disconnect supply without notice until the dangerous vegetation is removed. A requirement for the owner or occupier of land to give notice in writing to ETSA of any intrusion that does occur into a clearance space, would be a further useful provision.

#### 7.3.2 Line Clearance Standards

The Act should be amended also to make ETSA responsible for line clearance in accordance with the standards and procedures recommended by the Bushfire Prevention Council.

#### 7.3.3 Disconnection of Electricity

ETSA should be given express power to disconnect electricity where a line is found to be damaged or there is an imminent risk of damage to the line due to very high wind, interference from trees or any other cause.

#### 7.3.4 Tree Planting Control

ETSA should be empowered to charge land owners for the cost of removal of trees planted after powerlines have been constructed and where not

in accordance with regulations setting out clearance zones and standards of trees to be planted.

#### 7.3.5 Variation of the Point-of-Supply

A consumer's service line may be compulsorily undergrounded as a bushfire hazard reduction measure. As described in Section 5.4.4, this is proposed to occur without a requirement for the consumer to take action at his own cost. Nevertheless to carry out undergrounding ETSA need to be in a position to have power to require the consumer to accept a new point-of-supply. The point-of-supply is not currently recognised in legislation; it is an attribute of the contract between ETSA and a consumer. But to require the consumer to accept a new point-of supply may need to be embodied in legislation.

#### 7.4 THE LOCAL GOVERNMENT ACT

The Local Government Act will need to be amended to enable Local Councils to recover costs associated with bushfire prevention from ratepayers. These costs must include the levies proposed to be recovered from Local Government under the proposed amendments to the Country Fires Act. The way in which the cost recovery is allocated amongst ratepayers should be determined by Local Government.

#### 7.5 LEGAL LIABILITY

The legislative initiatives recommended in this report are not intended to affect existing liability at common law of Local Councils, ETSA, Government Departments and Agencies and land owners for bushfires started or fuelled as a result of negligence.

The only effect may be to provide an argument for reasonableness of action. A court may be persuaded to this conclusion where a party has participated co-operatively in the bushfire prevention planning provisions now being proposed and where those plans have been carried out in an effective and timely manner. In so far as such a conclusion may be anticipated by agencies and individuals and induce them to co-operate with bushfire prevention planning and achievement then the Working Party agreed that this is a desirable influence.

## 8. IMPLEMENTATION

### 8.1 GENERAL

The Working Party recognises that a number of steps will be necessary before action can be taken on all of the proposals contained in this report. These include:

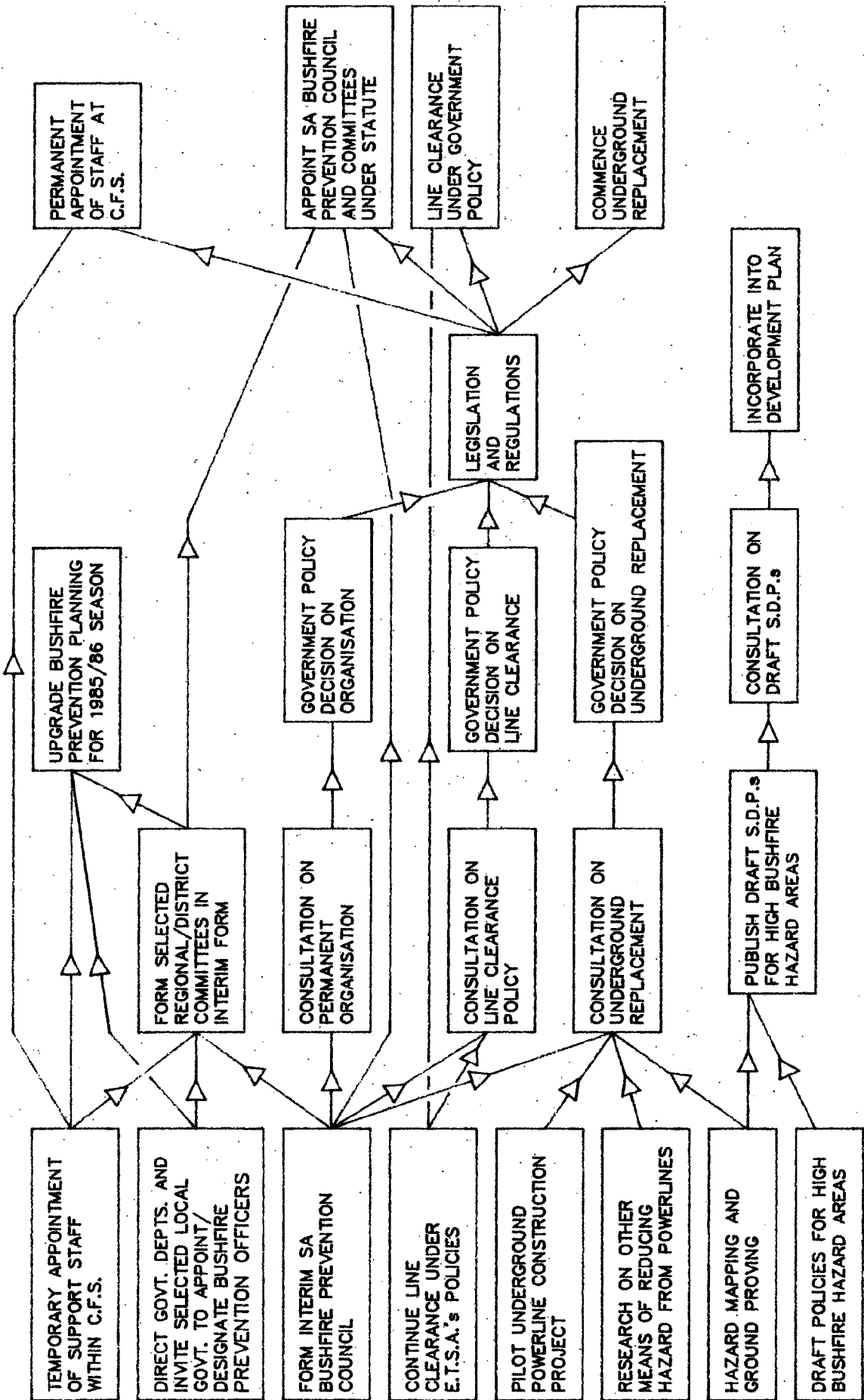
- \* further work in providing more detailed proposals in certain areas, eg underground replacement of existing overhead powerlines
- \* comprehensive consultation with local government, government agencies and those people in the community affected by the proposals
- \* assessment of responses and final decisions by the Government
- \* enactment of enabling legislation
- \* implementation

The importance of consultation cannot be overstressed considering that the whole thrust of the proposals is towards a decentralised participative style of management for bushfire prevention.

In some respects, such as the proposal to create a Bushfire Prevention Council, the consultation process may commence through an invitation for public comment on this report. Other areas such as line clearance policies and the proposal to place certain existing powerlines underground will require further public consultation at appropriate times as more specific proposals are prepared. This more detailed sequence of implementation actions is shown in Diagram 2.

At the same time, it would be unfortunate if the 1985/86 bushfire season was allowed to come without taking action to improve bushfire prevention and protection measures to the extent possible. Furthermore, the knowledge and experience to be gained in 1985/86 will allow greater effectiveness in 1986/87 and subsequent years.

SEQUENCE OF IMPLEMENTATION ACTIONS





Early action is also required if other bushfire prevention initiatives are to be in place in the longer term.

## 8.2 INTERIM PROPOSALS

### 8.2.1 Interim Organisation

In order to maximise the effectiveness of bushfire prevention in 1985/86 without unduly pre-empting final decisions, the Working Party makes the following recommendation:

#### RECOMMENDATION 28

THAT early authority be given for the Director of the Country Fire Services to employ up to an additional four (4) staff on a temporary basis to enable a start to be made on the development of the technical and administrative support functions which will be required for the proposed South Australian Bushfire Prevention Council.

This will enable a start to be made in the preparation of draft submissions on policies, procedures and training programs.

The Working Party also recommends:

#### RECOMMENDATION 29

THAT the Government establish a non-statutory Interim South Australian Bushfire Prevention Council by inviting membership from those organisations listed in Section 4.6.1.

In addition to early consideration of the matters contained in Section 4.7 it is proposed that the Interim Council will:

- \* promote the early establishment of an Interim Mount Lofty Ranges Regional Bushfire Prevention Committee
- \* promote the early establishment of Interim District Bushfire

Prevention Committees for all Local Government Authorities in the Mount Lofty Ranges region

- \* promote the establishment of Interim District Bushfire Prevention Committee in other bushfire prone areas
- \* arrange for comprehensive community consultation on this report and provide consolidated advice to the Government on community responses.

### 8.2.2 Bushfire Prevention Officers

Bushfire Prevention Officers are seen as the key to the successful establishment of a bushfire prevention planning process in both Government Departments and Local Government. Until such time as legislation is enacted, there will be no statutory requirements for Local Government to appoint or designate bushfire prevention officers. However, those Councils in high bushfire hazard areas should be well advised to anticipate the advent of such a requirement and, as a matter of responsibility to their own citizens, proceed to make these appointments.

It is important that State Government agencies take a lead in this regard. To that end the Working Party recommends:

#### RECOMMENDATION 30

THAT the State Government agencies with significant landholdings in high bushfire prone areas make an early appointment or designation of an officer as a 'Bushfire Prevention Officer' and, using this officer as a co-ordinator to initiate (or continue) the preparation of bushfire prevention plans for Government Lands.

### 8.2.3 Hazard Mapping

The preparation of Hazard Maps is central to the integration of bushfire hazard reduction into planning and the completion of

proposals for the undergrounding of existing electricity distribution lines. A good start has been made, but it will take at least the remainder of the year to produce maps of an acceptable standard for the first region, the Mount Lofty Ranges.

Even to achieve this timing will require considerable priority within the Department of Environment and Planning.

#### RECOMMENDATION 12

THAT the relevant departments and agencies (including the Department of Environment and Planning, the Department of Lands and the Country Fire Service) give priority to a mapping program for the high bushfire hazard areas of the State, with a view to producing policy area maps which, after ground review and proving, will support the application of bushfire risk reduction policies.

#### 8.2.4 Early Actions Required of ETSA

In order that those recommendations of this report which pertain to electricity distribution may be considered in more detail, and in due course implemented, certain early actions are required of the Electricity Trust of South Australia (ETSA).

##### Line Clearance

This is a vital program to bushfire risk reduction and must, in the interim, continue under ETSA's own policies.

For this procedure to be brought under Government policy, the first requirement is for ETSA to table its line clearance standards before the Interim South Australian Bushfire Prevention Council. This will afford ETSA an opportunity to obtain an external review of their line clearance policies.

Even if the Government delays the formal authorisation of these standards until the Country Fires Act is amended and the Bushfire

Prevention Council constituted under statute, there would be nothing to stop the draft standard from being used as a guideline by the proposed District Bushfire Prevention Committees. Further valuable experience in the applicability of the standards to actual difficulties in the field will be gained if ETSA pursues this course of action.

#### Pilot Underground Powerline Construction Project

An early start should be made on a pilot underground replacement scheme as recommended in Section 5.4.6. Information from this scheme will assist the Bushfire Prevention Council in assessing the environmental impact of underground construction and to ensure that adequate safeguards for the environment are adopted prior to the full scale underground replacement program. This information will also be of help in a Notice of Intent or Environmental Impact Statement as required for the proposed underground replacement program.

#### Proposal for Underground Replacement of Existing Powerlines

The Working Party strongly supported a program to underground at least those lines which present the greatest bushfire hazard. However, a full recommendation of a program in a form ready to proceed has not been possible. This is due mainly to the current non availability of adequate bushfire hazard maps.

As these maps become available it will be possible to more exactly define the powerlines with the greatest justification for being placed underground. Then a boundary must be drawn to define a region within which all properties benefit through reduced risk from bushfire as a result of the planned underground replacement. The staging of construction taking into account the many practical problems should also be part of a submission to the Bushfire Prevention Council.

Subject to approval, the works program and the collection of levies could, at the earliest, commence in the 1986/87 financial year. when this occurs, this will have become one element of ETSA's bushfire risk reduction policy and subject to the same processes of review discussed previously.

#### 8.2.5 Development of Planning Policies

A start has been made in this area jointly by the Department of Environment and Planning and the Country Fire Services (CFS). This work too, now needs to be advanced to the stage where it can be displayed as a Minister's Draft Supplementary Development Plan. It is expected that this plan will be ready by late 1985.

Once the Interim Bushfire Prevention Council is established it should exercise its role of co-ordinating the bushfire prevention aspects of the planning process. Until then, there seems little alternative to the CFS continuing to undertake this function.

The policy to underground new powerlines in high bushfire hazard areas should be included in this process even though it has been recommended that ETSA proceeds to apply that policy in the interim.

#### 8.2.6 The Mount Lofty Ranges Supplementary Development Plan

As discussed, it will be late in 1985 before bushfire risk reduction policies and the necessary hazard maps could come together in a revised draft Supplementary Development Plan for the Mount Lofty Ranges. This could allow approval of the Supplementary Development Plan with the bushfire risk reduction criteria included by the third quarter of 1986.

In the meantime, every initiative should be taken by Local Government, the CFS and the Department of Environment and Planning to discourage development in high hazard locations which cannot be adequately defended against bushfire.



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APPENDIX I

SUMMARY OF INITIATIVES TAKEN BY  
THE ELECTRICITY TRUST OF SOUTH AUSTRALIA





SUMMARY OF INITIATIVES TAKEN BY  
THE ELECTRICITY TRUST OF SOUTH AUSTRALIA

1. Increased resources have been allocated to line clearing (tree cutting). Annual expenditure increased from \$2.6 million in 1982/83; \$6.7 million in 1983/84; and a budgetted \$8.5 million in 1984/85. Much of the increase has been achieved by the extensive use of tree cutting contractors .
2. 176 000 spacers have been fitted to low voltage mains in bushfire prone areas. (This program is virtually complete, the main exceptions being in the Riverland and the southern parts of the Mt Lofty Ranges).
3. Line clearance standards have been thoroughly reviewed and an amended instruction issued to work crews.
4. Improved training of work crews engaged in line clearing has been introduced. New training films on line clearing and fitting spacers have been prepared .
5. Instructions to work crews engaged on the patrol and inspection of powerlines have been thoroughly reviewed and amended instructions issued. A Distribution Inspection Supervisor to co-ordinate this work has been appointed.
6. A senior engineer has been allocated to the appraisal and monitoring of bushfire risk reduction measures.
7. A comprehensive review of electricity distribution policies in bushfire prone and environmentally sensitive areas by W D Scott and Company was commissioned early in 1984. This report was released in July 1984. ETSA has announced that it accepts the broad thrust of the report.

8. A senior executive engineer has visited the ETSA to study American practices in respect of powerlines in bushfire prone areas. other engineers have made interstate visits for similar purposes.
9. Early in 1984 pilot schemes were introduced in three Mains Districts for the systematic reporting and subsequent computer processing of powerline defects. This is expected to lead to improved preventative maintenance programs and analysis of fire risks. It is in line with a Scott Report recommendation.
10. In accordance with recommendations of the Scott Report:
  - \* Two professional foresters/horticulturists have been appointed.
  - \* Additional trainee technical officers have been engaged.
  - \* Presentations have been made to a number of interested bodies including Local Government Officers and members of Local Government Councils on the need to keep trees clear of powerlines and ETSA's practices and standards. An audio-visual film has been prepared for this specific purpose.
  - \* About 100 locations justifying undergrounding have been identified for consideration by Councils and local community groups.
11. A scheme has been introduced for the removal of unsuitable trees near powerlines and the provision of replacement plants of a suitable type.
12. Pamphlets on tree planting near powerlines have been prepared.
13. ETSA participated in the initiation and establishment of the Fire Information and Reduction Exercise ('FIRE') in the Mitcham hills area of the Belair district and is actively participating in the Task Force guiding this project.

14. ETSA has announced that it is prepared to contribute to the cost of placing existing mains underground in accordance with the recommendations of the Scott Report and is prepared to discuss with local communities mechanisms by which they can contribute to the program. In particular, ETSA have promised to pay half the cost of a 20 year \$120 million program for undergrounding existing mains in declared bushfire hazard zones.
15. The Electricity Trust is actively promoting the undergrounding of all new extensions of powerlines and private services.
16. For the duration of the 1983/84 bushfire season, control gear was altered so that switches on powerlines supplying bushfire prone areas did not reclose automatically immediately after they had opened. Similar action has been undertaken during the 1984/85 bushfire season.



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APPENDIX II

SUBMISSIONS, CONSULTATIONS AND REPRESENTATIONS  
WITHIN SOUTH AUSTRALIA



SUBMISSIONS, CONSULTATIONS AND REPRESENTATIONS WITHINSOUTH AUSTRALIAList of Individuals and Groups in South Australia Consulted During the Study

Mr B Graham	Department of Agriculture
Mr R Hook	Department of Environment and Planning
Mr N Newland	National Parks and wildlife Service
Mr H McBeth	National Parks and wildlife Service
Mr W Davies	Fire Service Co-ordinating Committee
Mr L Sykes	ETSA
Mr J Hoepner	ETSA
Mr R Kean	ETSA
Mr D Roberts	Local Government Association
Mr A Bruce	Metropolitan Fire Service
Mr D Mutton	Public Service Board
Mr F Fairhead	State Disaster Committee
Mr B Lancaster	State Emergency Service
Mr D Douglas	Consultant
Mr L Johns	CFS
Mr T Crichton	CFS
Mr P Mills	CFS
Mr K Taeuber	Interim CFS Board
Mr P Swann	Interim CFS Board
Mr D Gerschwitz	SGIC
Mr E Pfeiffer	Woods and Forests Department
Mr J Pratt	Woods and Forests Department
Mr J Douglas	South Australian Centre for Remote Sensing

Representatives from Stirling, Mitcham, Happy Valley and East Torrens Councils.

Representatives from the District Councils of Beachport, Coonalpyn Downs, Lacedpede, Lucindale, Millicent, Mt Gambier, Naracoorte, Penola, Robe and Tatiara and the Corporation of Naracoorte.

Representatives from the District Council of Clare.

Representatives from the South Australian Conservation Council and the Mount Lofty Ranges Association.

List of Organisations from whom written Submissions were Received

Electricity Trust of South Australia  
 Country Fire Services  
 Morialta Residents Association  
 Mt Lofty Ranges Association  
 Environmental Protection Council  
 South Australian Volunteer Fire Brigade Association  
 South Australian Centre for Remote Sensing





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### APPENDIX III

#### BACKGROUND TO BUSHFIRE PREVENTION AND PROTECTION IN SOUTH AUSTRALIA



## BACKGROUND TO BUSHFIRE PREVENTION AND PROTECTION IN SOUTH AUSTRALIA

An Historical Perspective

From the very start of bushfire control in the State the philosophy of local people helping themselves by joining together to fight fires has been fundamental. The original 1913 Bushfire Act gave local councils the authority to appoint Fire Control Officers with specified powers and responsibilities for fire prevention and suppression. The concept of council appointed Fire Control Officers with specified powers remains to this day. Funding of fire fighting equipment has also traditionally had a Local Government base although with the formation of the Emergency Fire Services in 1947, the State and Insurance industry have also made substantial funds available. The need for local coordination, planning and influence over fire fighting services was reflected in the 1971 Working Party Report of proposed changes to the organisation of fire services in the State - the 'Kerr Report'. Section 3 iv) a) of that report sets out the proposed functions of "Local fire advisory committees" as follows:

"Noting the success of local fire advisory committees in some district council areas of the State, the Working Party favours the establishment of such committees in each district council area. We envisage such committees having the following functions:-

1. to promote interest in fire prevention, fire protection and fire suppression within the council area;
2. to advise council and other bodies, on matters of fire prevention, protection and suppression;
3. to refer to the regional fire-fighting associations any matters which the committee considers should be so referred;
4. to elect delegates to the regional fire-fighting associations.

In order to carry out these functions for the councils, the following membership is proposed for local fire advisory committees:-

1 representative of council nominated by council.

1 representative of each country fire service organisation in council area.

1 representative of the Woods and Forests Department (if the Department has land in the area).

Any other persons nominated by council.

It is suggested that the council should appoint a chairman for the committee."

"Local fire advisory committees" in the form suggested by the Kerr working Party were not implemented. Instead, Section 21 of the Country Fires Act, 1976 provides for the formation and registration of District fire-fighting associations, viz:

"21. (1) The Board may-

(a) upon the application of an association seeking registration as a district fire-fighting association,

and,

(b) with the consent of the council for an area,

register the association as a district fire-fighting association for the area.

(2) The Board may register an organisation as a district fire-fighting association without application being made under this section where the organisation was registered, immediately before the commencement of this Act, under the repealed Act.

(3) The Board may require any organisation that should, in the opinion of the Board, be registered as a district association, to apply for registration under this section.

(4) A registered district fire-fighting association is a body corporate authorised-

- (a) to exercise a general oversight of measures taken to facilitate fire-fighting within the area;
  - (b) to advise the Board, or a regional association whose region includes the area, upon any matters referred to the district association for advice or upon any matters that should, in the opinion of the district association, be brought to the attention of the board of the regional association;
- and,
- (c) to perform such other functions as may be assigned to the association by its constitution, or by regulation under this Act."

This Section of the Act reflects the general emphasis of the Act and on the activities of the Board on fire-fighting activities and the effective management of these. Even though the original intention of the rationalisation envisaged by the Kerr Report was to incorporate appropriate coordination of fire prevention planning, this is not strongly reflected in the Act. Also, partly because of pressures on funding through demands for new equipment and because the Act also gives power to local government for hazard reduction programs, the CFS Board did not give this a high priority. It was assumed that the Board, in itself, was achieving this. However, there was a failure to recognise that, quite properly under the Act, the Board would devote its time and energy to the organisation of an effective fire service. Local government has generally found it difficult to enforce hazard reduction programs on its own and privately owned land and government agencies with large land holdings often incorporating a high hazard have been left to undertake their own fire prevention planning.

### Recent Events

Two recent events combined to form the immediate background and circumstances of this Working Party study.

First, as outlined in the Introduction, was the Government decision to establish this Working Party to review the Government policy aspects of the recommendations made for ETSA by W D Scott (1984).

At about the same time the Minister of Emergency Services announced the Government's decision to replace the Board of the Country Fire Service. His statement at the time included the following (the reference to the "ETSA Report" is to the W D Scott report referred to above):

"The Government has decided to abolish the existing Board and replace it with an interim Board along the lines recommended in the corporate review. The new Board will consist of the following persons, to be appointed by the Governor:

- \* an independent Chairmen with management expertise
- \* the Under Treasurer or his nominee
- \* representative of Local Government
- \* person representing volunteer fire fighters
- \* the Director, ex officio

The decision to replace the Board is not a reflection upon the individuals who make up the Board but rather a reflection of their collective inability to undertake the functions required of them by the Act. As the PAC and the corporate review both indicate, for a Board such as this to operate effectively, it must be small, and its membership must reflect the management expertise required to undertake the superintendence of an organisation such as the CFS.

However, in the long term, the Government intends to do away with the Board structure as the authority in charge of the day-to-day administration of a fire fighting service. As has been well demonstrated by the Metropolitan Fire Service, it is preferable to appoint a suitable professional to head the service with a direct reporting line to the responsible Minister of the Crown.

In order to ensure that this transition is achieved with the minimum of disruption to the CFS, the Board I have outlined above will be an interim authority only, to operate until such time as the legislation to establish the permanent bushfire authority recommended in the ETSA Report can be introduced. At this time, I anticipate that this will be early in 1985.

When the bushfire Authority is established, the interim board will be abolished and the Director of the CFS will be responsible to the Minister of Emergency Services for the day-to-day administration of the service.

The new authority will undertake these duties prescribed for it in the ETSA Report as well as acting as an advisory body to the Minister in respect of the CFS. This will ensure that the many interests such as Local Government, the Volunteer Fire Fighters, the Regional Fire Fighting Associations, the National Parks and Wildlife Service, the Woods and Forests Department, the Insurance Industry, the Department of Lands and other interested parties will all be able to be represented on a permanent authority with an appropriate advisory role in respect of bushfire prevention. Such a high degree of representation is simply not practical on a body which is charged with the management of a fire service."

Ministerial Statement, 16 October 1984

As a consequence of this announcement the Working Party had its terms of reference widened "to enable the Working Party to take into account the broad requirements of planning and management of bushfire prevention in developing options for organisational structures".





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## APPENDIX IV

### KEY ISSUES FROM OTHER STATES



KEY ISSUES FROM OTHER STATESCo-ordinating or Advisory Bodies

The main objective of this study is to identify opportunities for organisational arrangements and structures to improve co-ordination and achievement of bushfire protection planning.

At State level New South Wales and Western Australia have somewhat similar overall co-ordinating bodies. The NSW Bushfire Prevention Council has 27 members, set out in the Bushfires Act as follows:

- "(2) The members of the Bush Fire Council shall be appointed by the Governor, and of those members:
- (a) one, being a person nominated by the Minister for the purpose, shall, in and by the instrument of his appointment, or by a subsequent instrument, be appointed as the Chairman of the Bush Fire Council.
  - (b) one, who shall be nominated by the Minister on the recommendation of the Minister for the time being administering the Forestry Act, 1916, shall be the Commissioner appointed under that Act or some other person representing that Commissioner.
  - (c) one, who shall be nominated by the Minister on the recommendation of the Minister for the time being administering the National Parks and Wildlife Act, 1974, shall be the Director of National Parks and Wildlife or some other person representing the Director of National Parks and Wildlife.
  - (d) one, shall be a person nominated by the Minister on the recommendation of the Board of Fire Commissioners of New South Wales.
  - (e) one, shall be a person nominated by the Minister on the recommendation of the Shires Association of New South Wales.

- (f) one, shall be a person nominated by the Minister on the recommendation of the Insurance Council of Australia.
- (g) one, who shall be nominated by the Minister on the recommendation of the Minister for the time being administering the Western Lands Act, 1903, shall be the Western Lands Commissioner or some other person representing the Western Lands Commissioner.
- (h) one, shall be a person nominated by the Minister on the recommendation of the Under Secretary, Department of Services.
- (i) one shall be a person nominated by the Minister on the recommendation of the Commissioner of Police.
- (j) one, shall be a person nominated by the Minister on the recommendation of the Town Clerks Society of New South Wales.
- (k) the remainder shall be persons nominated by the Minister, of whom not less than five shall be persons who are members of bush fire brigades.

In WA the Bush Fires Board, the staff of which are part of the Department of Lands, consists of 16 members set out in the Bush Fires Act as follows:

"The Board consists of:

- (a) the Under Secretary for Lands who is Chairman of the Board,
- (b) six persons at least five of whom shall be actively engaged in the business of farming, actively engaged in any organisation for the prevention, control and extinguishment of bushfires and so engaged in any bush fire brigade established under Part IV of this Act nominated by the executive council of the body known as the Country Shire Councils' Association of WA.
- (c) a person nominated by the Minister for Forests.

- (d) a person nominated by the Minister for Agriculture.
- (e) a person nominated by The Western Australian Government Railways Commission.
- (f) a person appointed to be representative of the insurance industry in the State.
- (g) a person nominated by the Commissioner of Police.
- (h) a person appointed to be representative of the sawmilling industry in the state.
- (i) a person nominated by the Regional Director for the State of the Bureau of Meteorology.
- (j) a person nominated by the Minister to whom the administration of the Wildlife Conservation Act, 1950 is for the time being committed to represent the Western Australian Wildlife Authority constituted under that Act, and
- (k) a person nominated by the Minister to whom the administration of the National parks Authority Act, 1976 is for the time being committed to represent the National Parks Authority of Western Australia established under that Act."

There is no equivalent group in Victoria at a State level.

It became clear that both the Bush Fire Council and the Bush Fires Board as groups act more as forums, reviewers of what is being done by their staff, as overall policy advisors, and provide opportunities for raising issues. Their size prevents effective involvement in the management of bush fire protection programs.

However, this was not seen as a weakness by those involved. It was strongly argued that the bringing together of such large groups of stakeholders in this way makes a very positive and important contribution to bushfire prevention and protection planning. It is worth noting the strong land management role of the members of both organisations.

There was a strong emphasis in all States visited being placed on regional and district fire prevention committees. These are well developed and

apparently operating very effectively in Victoria and Western Australia. New South Wales is developing a number of initiatives to put such groups in place.

The Victoria Country Fire Authority Act sets out the composition and function of such committees in Sections 52 to 55, viz:

"52 (1) The Authority may appoint a regional advisory committee for each region (not being a region consisting wholly or urban districts).

(2) Each such committee shall consist of-

(a) the Regional Officer, who shall be the executive officers of the committee;

(b) two representatives (appointed by the Authority after election in the prescribed manner by delegates selected in the prescribed manner of each brigade in the group concerned) of each group of brigades operating within the region;

(c) not more than four representatives (appointed by the Authority upon nomination by the Forests Commission) of the Forests Commission;

(d) not more than two representatives (appointed by the Authority after election in the prescribed manner by the councils of the municipalities concerned) of the municipalities whose municipal districts are wholly or partly within the region; and

(e) any person appointed under sub-section (2A) as a member of the Committee.

(2A) The Authority shall, upon the request of a committee, appoint as a member of that committee a representative (nominated by the corporation concerned) of any public statutory corporation specified by the committee.

(3) The chairman of each such committee shall be elected annually by the members thereof.

53. The functions of a regional advisory committee shall be:

(a) to submit to the appropriate authorities recommendations and plans for-

- (i) the burning or clearing of a co-ordinated system of major firebreaks for the protection of the region; and
  - (ii) the carrying out of works (including the burning or clearing of firebreaks) for the prevention of the outbreak or spread of fire from dangerous areas within or immediately adjacent to the region;
- (b) to co-ordinate operational planning within the region; and
- (c) to carry out such other functions as are conferred or imposed upon regional advisory committees by regulations made upon the recommendations of the Authority.

DIVISION 3 - LOCAL ADVISORY COMMITTEES.

54. (1) The Authority may appoint a local advisory committee in respect or any area being within the country area of Victoria and being the municipal district or part of the municipal district of a municipality.
- (2) Each local advisory committee shall consist of-
- (a) the proper officer of the municipality, who shall be chairman and executive officer of the committee,
  - (b) one representative (appointed by the Authority after election in the prescribed manner by the members of the brigade) or each urban or rural brigade operating within the area.
  - (c) one representative (appointed by the Authority after election in the prescribed manner by delegates selected in the prescribed manner of each brigade in the group concerned) of each group or brigades operating within the area,
  - (d) a representative of the council of the municipality appointed by the Authority upon nomination by the council; and
  - (e) (where there is adjacent to the area any part of a forest or of any Crown land reserved from sale for the purposes of a national park pursuant to the Land Act 1958) a representative of the Forests Commission and appointed by the Authority

upon nomination by the said Commission.

55. The functions of each local advisory committee shall be-

- (a) to plan the burning or clearing of firebreaks within the area for which it is appointed;
- (b) to advise the appropriate authorities as to the existence of and steps to be taken for the removal of fire hazards within the area;
- (c) to recommend to the appropriate authorities the allowance or disallowance of applications for permits made pursuant to sections thirty-seven and thirty-eight of this Act;
- (d) to recommend to the Authority or to the appropriate authorities (as the case may require) any action which the committee deems necessary or expedient to be taken for reducing the risk of an outbreak of fire or for suppressing any fire which may occur within the area;

\* \* \* \* \*

- (f) to advise the proper officer concerning the removal of fire hazards under section forty-one of this Act;
- (g) to refer to the regional advisory committee for consideration all matters which in the opinion of the local advisory committee should be so referred;
- (h) to carry out such other functions as are conferred or imposed upon local advisory committees by regulations made upon the recommendations of the Authority."

The Western Australian Bush Fires Act is much less specific in Sections 67 and 68 viz;

"67 (1) A local authority may at any time appoint such persons as it thinks fit as a bush fire advisory committee for the purpose of advising the local authority regarding all matters relating to the preventing, controlling and extinguishing of bush fires, the



planning of the layout of firebreaks in the district, prosecutions for breaches of this Act, the formation of bush fire brigades and the grouping thereof under group brigade officers, the ensuring of co-operation and co-ordination of bush fire brigades in their efforts and activities, and any other matter relating to bush fire control whether of the same kind, as, or a different kind from, those specified in this subsection.

- (2) A committee appointed under this section shall include a member of the council of the local authority nominated by it for that purpose as a member of the committee, and the committee shall elect one of their number to be chairman thereof."

"68 (1) A group of two or more local authorities may by agreement join in appointing a regional bush fire advisory committee to assist them in the performance of their functions under this Act.

- (2) Where a group of local authorities agree to appoint a committee under this section:

(a) those local authorities, by agreement-

(I) shall fix the number of members of the committee and the quorum for the transaction of business at meetings of the committee;

(ii) shall determine the interests to be represented on the committee;

(iii) may make rules for the guidance of the committee;"

In Victoria, accountability for the committees lies with the Country Fire Authority whilst in WA it lies with Local Government. The emphasis in both places was on ensuring bushfire protection plans were prepared and that others affected by these plans were aware of them.

The 1982-83 Annual Report of the Bush Fire Board in WA lists the District Management Schemes.

The SEC Victoria were very enthusiastic about the contribution Local and Regional Advisory Committees are making to the efforts by the SEC to improve

the safety of its electricity distribution systems. It was clear that there is an open and frank recognition of the risk of fires being started from powerlines and a co-operative approach to efforts to reduce this risk including the development of "contingency plans" where that part of the system recognised to be most at risk is given special attention on days of extreme fire danger.

### Land Use Planning

In New South Wales, Victoria and Western Australia there have been strong moves in recent times to incorporate bushfire hazard as a significant criterion in land use planning decisions. In New South Wales and Victoria this thrust has come from within the respective departments of Environment and Planning although in conjunction with bushfire authorities. In Western Australia the Bushfire Board has taken the initiative and now, as a matter of course, is given the opportunity to comment on all zoning and development plans in special rural areas.

The Western Australian Bushfire Board have taken the view that it is not their role to prevent development. Rather they have attempted to ensure that all developments in high bushfire hazard areas satisfy their criteria in relation to:

- \* strategic fire breaks
- \* adequate water supplies
- \* clear vehicular access with no dead end roads
- \* the development and implementation of bushfire prevention plans.

In Victoria significant progress has been made in the development of hazard mapping programs in each Shire area of the State. This in turn has led to the development of bushfire plans in the area and to decisions concerning development applications.

The planning people in Victoria have rejected development applications on the grounds of too high a bushfire hazard. This has been challenged in the Appeal Courts and the decision based on the hazard mapping technique used in Victoria was upheld. There now appears to be widespread acceptance in Victoria of the need to take into account bushfire hazard in the high danger

areas and all Shires are working actively in this area.

A similar story applies in New South Wales although the time that such programs have been in place is considerably less. The Minister of Environment and Planning in New South Wales has issued a ministerial direction to all Local Councils in New South Wales requiring that bushfire hazard be taken into account in development decisions.

### Disaster Planning

In all States it is clear that considerable effort has been put into better co-ordinating services in the event of major disasters. The need for clear accountabilities in the event of a major bushfire disaster are clearly recognised and New South Wales through its co-ordinating committee, has very well-defined procedures that enable a single person to be put in charge of all services at various stages of development of a major fire. In Victoria all Shires are required to develop counter disaster plans for their areas.

In Victoria and Western Australia there has developed increasing co-operation between Metropolitan and Country fire services not only during an emergency situation but also at other times. In New South Wales a Task Force has been established to investigate ways of achieving better co-ordination and co-operation between the rural fire brigades and the brigades of the Board of Fire Commissioners.

### Fire Prevention Officers

Under the Country Fire Authority Act in Victoria, Local Councils are required to appoint what has been known as "proper officers". These officers have specific powers spelt out under the Act but have now had their names changed to Fire Prevention Officers. The Government has also ordered that all Government agencies must have a Fire Prevention Officer with similar roles to those within Local Government.

Those councils that are in particularly high bushfire hazard areas are tending to appoint full-time Fire Prevention Officers. Many of these officers have tertiary qualifications in forestry or other land management disciplines.

Through Victoria, New South Wales, and Western Australia there are large tracts of land managed by the Forestry Commission in each State and comprising native forests. In Victoria these, together with National Parks comprise approximately 40% of the area of the State. Some aspects of fire protection management differ in South Australia where such large native forests do not exist.

In all States there was a recognition of the particular difficulties posed in managing State national parks.

### Funding

There are major reviews of funding arrangements for rural fire services being conducted in both New South Wales and Victoria. There is an increasing belief that levies on insurance premiums are an inappropriate mechanism for funding of fire services. In Queensland insurance levies have been abandoned in favour of a levy on Local Government Rates.

### Training

Training of fire control officers in Western Australia appears to be well developed. During discussions with such people it became very apparent that they had received considerable training and were able to approach their work in a highly professional manner.

The Country Fire Authority of Victoria has a large and well developed training school for its own volunteers and staff. It has begun to undertake training of Fire Prevention Officers in Victoria and has an objective that in time no person shall be appointed as a Fire Prevention Officer unless that person has completed a course of training at the CFA.

New South Wales is approaching the same issue through the Technical and Further Education system but is also aiming to see the day where fire prevention officers will be required to have undergone a course before being appointed to such positions.

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APPENDIX V

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REFERENCES

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## APPENDIX VI

### GLOSSARY OF TERMS



GLOSSARY OF TERMS

To assist in reading this report, the following definitions and terms are provided:

1. 'bushfire prone areas' Localities or broader areas which have been or are likely to be subject to recurrent bushfires with a high potential for loss of life, property and character.
  
2. 'environmentally sensitive areas' Those bushfire prone areas where vegetation, landscape, cultural heritage, quasi-wilderness and other areas of recreational, education and scientific interest which are particularly valued by the community at large.  
  
They include national parks, wildlife sanctuaries, parts of public lands (eg reservoir reserves) and some private land including that held under Heritage Agreements.
  
3. 'risk' Risk refers to the relative chance, or probability of bushfire: starting and is determined by the presence or absences of causative agencies which may result in the ignition of fire and its subsequent spread.

4. 'hazard' Hazard is concerned with the condition of fuel and takes into consideration such factors as quantity, arrangements, and moisture content.
5. 'ground fuel' Any flammable material on or near the ground. Ground fuel is predominantly of plant origin and includes grass, crops, low bush etc.
6. 'fire danger' Fire danger is the resultant of all factors which determine whether bushfires will start, spread and do damage and to what extent they can be controlled.
7. 'fire protection' Action that is taken to reduce the level of fire impact that is likely to occur in a bushfire, eg cleaning out roof gutters or fuel reduction installations of sprinklers, etc.
8. 'bushfire prevention' Action which is taken to reduce or eliminate the risk of bushfires being started and/or developing into serious bushfires.
9. 'bushfire suppression' Action which is taken after a bushfire has started to contain the spread or extinguish the fire.
10. 'fire intensity' The rate at which a bushfire generates heat and hence its temperature and potential to spread.

11. 'controlled burning' Removal of ground fuel using fire under conditions in which the intensity will be limited and the fire readily contained.
12. '(bushfire) disaster contingency planning' The pre planning of actions to safeguard the health and welfare of people during and after a bushfire.
13. 'land use planning' A process for approval and imposition of conditions on new development.
14. 'line clearance' The cutting, trimming or control of planting of trees in the vicinity of overhead powerlines for bushfire prevention and other safety purposes.





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